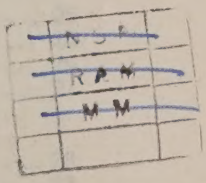
REPORT

OF THE

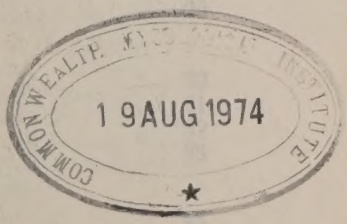
DIRECTOR-GENERAL OF FORESTS

FOR THE YEAR ENDED

31 MARCH 1974



Presented to the House of Representatives
Pursuant to Section 68 of the Forests Act 1949



BY AUTHORITY:
A. R. SHEARER, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND—1974
Price 40c

THE DIRECTOR-GENERAL OF FORESTS

to the Hon. C. J. Moyle, Minister of Forests

Wellington, 22 April 1974.

SIR,

I have the honour to present, pursuant to section 68 of the Forests Act 1949, the annual report of the operations of the New Zealand Forest Service for the year ended 31 March 1974.

I have, etc.,

M. J. CONWAY, Director-General of Forests.

Hon. C. J. MOYLE,
Minister of Forests,
Wellington.

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CONVERSION FACTORS

1 acre = 0.4047 hectares

1 cubic foot = 0.0283 cubic metres

FOREST POLICY AND HIGHLIGHTS

EXOTIC FORESTRY

Progress in afforestation—Last year's annual report stated that, in view of the large areas of suitable land available for afforestation without significantly prejudicing the expansion of the agricultural sector and because of the ever-increasing world demand for wood products of all kinds, a target of 100 000 acres (40 470 ha) a year of new planting was realistic. This target has been attained.

In 1973 State and private planting, excluding restocking, totalled 41 300 ha (102 000 acres), the highest ever recorded in New Zealand in a single year. The previous highest was in 1928, in the middle of the first planting boom. Last year's achievement, shared almost equally by the Forest Service and the private sector, clearly confirms the confidence of the Government, large and small companies, local authorities, and individual investors in the future of the forest industries. It also reflects the rising returns from forest produce, locally and internationally.

No major conflict in land use—Economic comparisons of farming and forestry have for some time revealed that forestry is more than able to hold its own as an investment prospect on a much wider range of sites than was once thought possible. Fears have recently been expressed that acquisition of land for afforestation now poses a threat to the expansion or maintenance of farming activity in some regions. These fears are exaggerated and need to be dispelled.

Some of New Zealand's exotic forests have been established on land that has never been farmed, notably the central North Island pumice plateau and the coastal sands. The remaining forests, by and large, have been planted on land which was cleared of native forest, farmed for a period until it became marginally economic, owing to gradual reversion to scrub and weeds or due to soil erosion, and therefore returned to forest use in the form of plantations. Though much of this land should not have been cleared of forest in the first place, it has fortuitously provided an alternative source of land for afforestation. Planting of marginal farm land on a significant scale began about 50 years ago, and in Nelson, for example, has embraced tens of thousands of acres without causing the social disruption that current critics advance against afforestation. The result is generally a much better pattern of land use, increased productivity, diversification of the region's economic base, and overall support for local facilities.

Most of the land being acquired by the State and by private concerns for planting is still either scrub land or poor farm land that will give a better return to the owner and to the region under forest. There has in recent years been some direct conversion of logged indigenous forests to exotics, but of the 360 000 ha of State exotic forest less than 25 000 ha or 7 percent has originated in this way. However, if in the future afforestation is not to be curtailed in districts where marginal and reverted farm land is becoming scarce, there are only two alternatives:

- Increase the rate of conversion of cut-over native forest.
- Acquire and plant land already in pasture.

The first is a sensible and logical alternative provided the land is not demonstrably better suited to agriculture or to regeneration of native forest. The second alternative would not necessarily mean complete loss

of farm production if recent concepts of combined tree growing and stock grazing are successfully developed; in the few instances to date where sizable areas of good grassland have been acquired by the Forest Service it has usually been with this concept in mind.

Whenever and wherever competition between alternative land uses becomes a problem, consideration will need to be given to whether it is best worked out in the market place or by more sophisticated land-use planning than any previously attempted.

MANAGEMENT OF INDIGENOUS FORESTS

Legislative changes—The Forests Amendment Act 1973, passed on 23 November 1973, contains two legislative changes of importance in the management of indigenous State forests.

The first is the complete transfer of provisional State forest land to permanent State forest land. These major categories of State forest have existed for 55 years and their origin is to be found in the desire of a former Commissioner of State Forests, Sir Francis Bell, to secure a forest estate of some permanence in the face of rapid, often unwise clearing for farming. The core of this estate has been permanent State forest land, a category which cannot be revoked except by Act of Parliament. To enable such a category to be established, without major problems of demarcation, Sir Francis introduced the concept of provisional State forest: land which could be withdrawn from State forest by a much simpler procedure for settlement. The main feature of the early legislation was that the forest estate was no longer to be simply the residue left after land settlement but was recognised as a pool from which farmable land could be carefully drawn with full consideration of all values. As knowledge of the indigenous forests has built up it has become apparent that only a very small proportion of provisional State forest is suitable for settlement, by far the greater being protection forest of the steep mountain and hill lands which must be retained. The effect of the 1973 legislation is to complete the original concept of a permanent forest estate protected by statute. Withdrawals of State forest land for farm settlement are not precluded by the new legislation, but will be subject to even greater surveillance than hitherto. Likewise, the transfer of State forest to national park status, where warranted, is not affected.

The second legislative change arising from the Forests Amendment Act 1973 is also concerned with the permanence of State forests, but more specifically with areas set aside for particular purposes. State forests are by law administered for:

- Establishment, culture, growth, protection, maintenance, and management of trees and other plants.
- Utilisation of forest produce.
- Conservation of water.
- Protection of native wildlife.
- Stabilisation of soil.
- Amenity, scientific, and recreational purposes consistent with proper use, management, and utilisation of State forest land.

Some of these uses are incompatible to a greater or lesser degree and in recognition of this fact areas of indigenous State forest have in recent forest planning been reserved for specific purposes. There has been criticism that areas of State forest land so reserved, although designated

by working plan prescription, have insufficient guarantee of permanency. The Officials Committee for the Environment when reporting* on the proposals for the South Island beech forests recommended that greater scope for public notification and objection be required before reserve or protection forest areas are withdrawn or amended.

The Forests Amendment Act 1973 authorises the Minister of Forests, by notice in the *Gazette*, to dedicate any area of State forest land for the particular purposes listed above. This will allow such categories as biological reserves and amenity reserves to be set apart under the Forests Act and this setting apart will be revocable only after public notification and the consideration of objections.

Beech forests—The Forest Service's proposals for the utilisation of the West Coast and Southland beech forests, under consideration since 1968, were formally outlined in a report to Parliament as long ago as October 1971. The Government's decision on these projects was deferred to allow the hearing by the Lands and Agriculture Committee of the House of Representatives of two objections opposing these proposals, wholly or in part. One of the petitioners, the New Zealand Conference on Environment and Conservation (CoEnCo), stated that the environmental impact report of the Officials Committee for the Environment was inadequate and that a proper opportunity had not been allowed to put forward alternative proposals to those of the Forest Service. A public inquiry into the undesirable effects of the latter was requested. The Royal Forest and Bird Protection Society's petition, which was widely circulated and signed by more than 100 000 people, sought to have the clear felling, burning, and conversion (to exotic forest) of beech forest forbidden and future commercial utilisation of any existing indigenous forests to be on the basis of natural regeneration or planting in native species only.

In July 1973 the chairman of the Lands and Agriculture Committee recommended that both petitions be "referred to Government for consideration". With regard to the Royal Forest and Bird Protection Society petition the committee considered:

"(a) That the main objective of any South Island beech utilisation scheme is the responsible use of the existing resources of land and forest and the establishment of well managed indigenous forests producing timber on a continuing basis.

"(b) That to achieve this objective substantial areas of exotic forests are required to complement the beech forests.

"(c) That the area of virgin beech planned for conversion to exotics be reduced by the Forest Service planting or encouraging the planting of exotics on additional non- or semi-productive land outside the existing beech forests."

On 8 October 1973 the Government approved the West Coast and Southland beech forests utilisation projects proceeding to the stage of inviting commercial proposals.

Last year's report said that every endeavour had been made to ensure that interested persons had access to all available information and that in view of this it was disappointing that much of the criticism of the

*N.Z. Officials Committee for the Environment. *Utilisation of South Island Beech Forests: Environmental Impact Report on Proposals of the Director-General of Forests.* Wellington [1973].

proposals had been based on misconceptions of their scope and intent. In order to provide better information and to give effect to the recommendations of the Officials Committee for the Environment and other groups the Forest Service published a booklet entitled *Beech Forests**. This has been distributed to conservation groups and to schools and has been made available to the public through bookshops.

In approving the beech projects proceeding to the stage of inviting commercial proposals the Government announced some modifications to the scheme originally proposed and described in this booklet. In the Southland scheme the decision was made to withdraw Waitutu State Forest meanwhile, thus allowing time for further investigations; future management would be reviewed after 5 years. For the West Coast scheme the major modification was the inclusion of land between Hokitika and Greymouth. The Government's decision was qualified by over 30 environmental constraints and was published in full† soon after the announcement.

The Forest Service has since consulted other Government departments and agencies in preparing a brochure inviting proposals from industry. The availability of wood for further processing has been recalculated to incorporate changes due to additional environmental constraints. The brochure will be released shortly with 12 months being allowed for the submission of proposals. Any proposals that are received from industry will be subject to further environmental examination, and if any is accepted there will be continuing environmental monitoring by the Forest Service and the Commission for the Environment. In inviting proposals from industry no irrevocable commitment has been made for utilisation to proceed.

Legislation was passed during the year to establish a South Island Beech Forests Management and Utilisation Council to advise the Government after considering all aspects affecting management, utilisation, wildlife, conservation, recreation, and ecological questions. This council has been named, consisting of men eminent in their respective fields and headed by the Dean of the School of Forestry at Canterbury University. In addition, a Scientific Co-ordinating Committee of Government and university scientists has been set up to advise the Minister of Forests. Its main function will be to keep under review the research programme associated with the beech forest projects, with particular reference to what additional research is needed.

Mamaku-Kaimai forests—In June 1972 the Forest Service announced plans for a large group of State forests on the Mamaku Plateau, the Kaimai Range, and nearby areas of the Bay of Plenty. The proposals had been examined by the Officials Committee for the Environment, the Forestry Development Council, and the Environmental Council. They had been endorsed by the Bay of Plenty Catchment Commission and the Hauraki Plains Catchment Board in respect of soil and water conservation. The total area of State forest involved was about 50 000 ha, of which 30 000 ha was zoned for permanent reservation. About 10 000 ha was planned for conversion to exotic plantation after logging; of this

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**Beech Forests*, by A. Kirkland, New Zealand Forest Service, Wellington, 1973.
†*Government Approval of West Coast and Southland Beech Forest Utilisation Proposals*, New Zealand Forest Service, Wellington, 1973.

4500 ha lay in Mangatotara State Forest. Applications from afforestation companies were invited for the leasing of this land. Almost exactly 1 year after the widely publicised initial announcement a number of organisations and individuals in and about Tauranga protested against the plans for Mangatotara Forest and requested that any tenders be held in abeyance. These protests were based on the claim that people living in the area of the Kaimai Range had only just become aware of the proposals, that no environmental impact report had been submitted, that there would be serious effects on the Tauranga electricity scheme and on farms, and that this was the only indigenous block with easy access and could be developed into a national park.

At the time the original proposals were made known the Government's environmental impact assessment procedure had not been introduced. In view of the local concern an environmental impact report for this forest was called for by the Minister of Forests. A statement on the management proposals with supporting maps has been circulated to organisations capable of providing expert comment on the aspects causing concern. Such comment will form part of the environmental impact report currently being prepared for auditing by the Commissioner for the Environment and subsequent public scrutiny.

Conservation of indigenous forests by exotic forestry—The production of sawn timber and veneers for the New Zealand market has become progressively more dependent on exotic forests as output from native forests has declined, particularly in the North Island. Over the last 20 years some 25 million m^3 (900 million cu ft) of sawlogs and veneers has been produced from 200 000 ha (500 000 acres) of our native forests. In the same period exotic forests have yielded 43 million m^3 (1500 million cu ft) of such produce for the domestic market alone from only 80 000 ha (200 000 acres). Had these exotic forests not been made available through the foresight of our earlier politicians, foresters, and industrialists, and had we been dependent on our merchantable native forests, they would by now be virtually exhausted. Those who denigrate the alien pine might well reflect on this fact.

The key to the preservation of native forests by reservation for various purposes or for sustained-yield management lies in the continued development of exotic forests. Three examples may be given of how exotic forests have this year played a direct role in the conservation of native forests.

- In February 1973 as part of a revised kauri policy the Government announced its intention to reduce the permissible annual cut of this species as quickly as possible consistent with economic, social, and legal constraints. Such legal and social constraints existed in the case of Warawara State Forest where an agreement was in force for the sale of indigenous timber including kauri, for 10 years from 1967, and the employees of a sawmilling company depended for their livelihood on the milling and processing of this wood. They, as well as those engaged in the specialised uses of kauri, would obviously have been adversely affected by an immediate closure. Continued utilisation aroused considerable opposition from conservation groups, but had less publicised support from those concerned with the social problems. The search for an equitable solution took more than a year and depended on the co-operation

of the company concerned. Negotiations were brought to a successful conclusion by the agreed substitution of wood from local and Bay of Plenty exotic forests for contractual rights in Warawara Forest.

- An area of 1850 ha of forested land between the Hutt and Akatarawa Rivers has been added to the Tararua State Forest Park. Although most of the area has been logged, it has considerable recreational potential and contains a fine virgin stand of about 300 ha. The sequence of unlogged rimu, miro, rata, Hall's totara, and beech forest types in this stand is unique to the region. The land was owned by a sawmiller and logging of the native forest had been planned. With his co-operation it was agreed to replace this native timber with logs from the nearest exotic State forest, a prime consideration in acquiring the block for public enjoyment and scientific interest.
- Approval in principle has been given to the exchange of productive exotic forest land for recreationally important indigenous protection forest areas in the central North Island and negotiations have begun with the owners.

Management of podocarp forests—In south Westland podocarp forest management has now been under way for 18 years. It began with a decision in 1956 to confine clear felling to hill country and to begin strip felling and systematic management on the terraces. In 1965 this concept was improved upon by replacing strip logging with selection logging involving the removal of overmature trees and the fostering of regeneration in the gaps which are created. A forest ecosystem is thus retained at all times in a relatively undisturbed condition. Selection logging, which will take place at intervals of 30 years or more, has had the effect of rejuvenating the forest. In the relatively short time it has been practised good results have been obtained; the physical difficulties of logging wet terrace lands have been overcome and good regeneration is now in evidence over much of the earliest workings. The Forest Service policy for south Westland forests is to manage as much of the production forest area as possible as indigenous forest on a sustained-yield basis. Accordingly, attempts have now been made to extend selection logging to the rolling hill country. This has been made possible by the use of more versatile logging machinery. The structure of the hill forests differs from that of the terraces, but by imposing a diameter cutting limit, so that trees less than 400–500 mm (16–20 in.) in diameter are retained, about a fifth of the merchantable stems remain after logging and, more important, groups of poles and saplings of rimu can be preserved. The effect is that a podocarp forest structure is retained and wood is obtained for local industry and national needs, but other forest values are not lost. Liaison and co-operation with industry in this new development have been excellent.

Attempts to manage North Island podocarp forests started at Pureora and Whirinaki State Forests in 1939. These forests, although dominated by rimu like the south Westland forests, do not generally have trees of all ages and sizes in a single area and are therefore less suited to selection forest management. Attempts at management were abandoned after the Second World War and cut-over forests were then usually converted to exotic plantations. Research work has continued, but studies in Pureora, Whirinaki, and Rotoehu Forests and on the Mamaku Plateau generally

confirm that sustained-yield management of central North Island podocarp and podocarp/tawa forests for timber production is far from promising. However, recent work in podocarp forests immediately west of Lake Taupo has revealed a good representation of younger and smaller trees in some types of forest and there is a prospect here of introducing selection logging to maintain a podocarp forest structure. This is currently being investigated as the last possible opportunity for podocarp management in the North Island.

FOREST PARKS

The national parks of New Zealand, 10 in all and embracing 2.1 million ha, have been created "to preserve in perpetuity for the benefit and enjoyment of the public areas containing scenery of such distinctive quality or natural features so beautiful or unique that their preservation is in the national interest". Under the Forests Act any areas of State forest land may be set aside as State forest park "for the purpose of facilitating public recreation and the enjoyment of the public of any area or areas of State forest land in conjunction with the other purposes for which it is managed".

The complementary nature of these two types of park is immediately obvious, but it seems there is confusion in some people's minds as to how they are administered and what may be done in each. Whereas national parks are administered by boards appointed by the Minister of Lands and act within the policy of the National Parks Authority, forest parks are managed by the Forest Service under working plans approved by the Minister of Forests, and with the assistance of advisory committees appointed by the Minister "to advise on the recreational aspects of the administration of the park". These committees are representative of user groups, of those concerned with forest conservation, and of local interests; they invariably include nominees of the Federated Mountain Clubs and the Royal Forest and Bird Protection Society.

A high degree of liaison is maintained in the administration of national parks and forest parks. The Forest Service is formally represented on the National Parks Authority, and proposals for new forest parks are examined by the Forest Parks Co-ordinatiing Committee, consisting of the permanent heads of the Forest Service and the Department of Lands and Survey and their deputies.

Freedom of entry and access is common to both national parks and forest parks, subject in the case of a national park to this being consistent with the preservation of the park's natural features and the protection and well-being of its native flora and fauna. It is at this point that differences in management emerge, partly because of the objects for which the two sets of parks were created and partly because of their composition. The cornerstone of the national parks legislation is the preservation of natural features, outstanding scenery, and of native flora and fauna. State forest park legislation is less restrictive in that, although the same principles are followed over the greater part of a forest park, wider objectives are pursued involving the physical use of the land. Thus the planting of exotic trees for soil and water conservation, and for timber production on suitable land, is not precluded. Nor is the utilisation of indigenous forest ruled out, although in practice this is and will be limited. These multiple-use objectives are exemplified in the Kaweka State Forest Park, which was gazetted this year. Comprising 60 800 ha

of mountain land in Hawke's Bay, it is diverse in character and includes 14 300 ha of land scheduled for exotic forest, some badly eroded mountain tops where revegetation has been started with exotic species, and a large area of beech protection forest.

Since the forest park legislation came into force in 1965 eight parks totalling 703 000 ha have been gazetted, six in the North Island (Coromandel, Pirongia, Kaimanawa, Kaweka, Tararua, and Rimutaka) and two in the South Island (North-west Nelson and Craigieburn). Still awaiting gazettal is Lake Sumner Forest Park of 73 500 ha. The Minister of Forests has approved in principle the creation of four more parks (Haurangi, Ruahine, Kaimai-Mamaku, and Catlins). When these are gazetted the area of State forest parks will approach 1 million ha.

Recreation areas—The 1965 legislation which sanctioned the establishment of State forest parks also provided for setting aside recreation areas, to which the public has similar freedom of entry without a permit, except for hunting. They are generally smaller than forest parks and of insufficient size or complexity to warrant park status and the setting up of advisory committees, and are administered directly by conservators of forests. To date five such areas have been gazetted totalling over 23 000 ha; they consist of exotic forest at Hanmer (204 ha) and Tairua (369 ha) and indigenous forest in Pukenui (592 ha), Great Barrier (7 247 ha), and Whareorino Forests (14 733 ha).

Approved in principle and awaiting gazettal are nine further areas totalling 70 000 ha. Among these is the Atuanui recreation area, near Auckland, which is part of the national walkway system.

FOREST SANCTUARIES

The number of forest sanctuaries still stands at 13, embracing 15 419 ha. Among those approved and awaiting gazettal is the 800-ha sanctuary in Warawara Forest, which will include a substantial area of overmature kauri.

Forest sanctuary status is conferred over State forest land by Act of Parliament and can only be revoked in the same way. Strictly, sanctuaries are set apart to preserve in their natural state the indigenous flora and fauna therein and for "scientific and other like purposes". However, there has been a tendency for them to be established because of widespread public interest, not just in the preservation of particular forest areas but also for the opportunity to enjoy them. Thus, there is a degree of conflict. Now that the Forests Amendment Act 1973 provides for the setting apart and dedication of areas of State forest for specific purposes, the opportunity is presented to review the respective roles of sanctuaries and areas so dedicated, and to prescribe the precise conditions of entry for scientific study or public enjoyment.

NOXIOUS ANIMAL CONTROL

Examination by Government Caucus Committee—Official policy in respect of noxious animals is frequently quoted as being one of extermination. This is not correct and it is again pertinent to restate current policy, which is:

> "To control noxious animals generally, to a level dictated by correct land use, and to eradicate noxious animals locally where necessary and practicable following an order of priority dictated by the values at stake and at a rate governed by available finance."

Mainly because of recent developments in the venison industry and in safari enterprises based on noxious animals the Government has set up a caucus committee whose terms of reference include an examination of the effect of commercial hunting on recreational and safari hunting and the need for continued Government operations. The Forest Service, along with other Government agencies, has made submissions to the caucus committee, which is currently deliberating on them.

Venison industry—A rapid escalation of prices paid to hunters for game meat early last year stimulated the already intense commercial hunting pressure and posed further problems of maintaining order within the venison recovery industry. The situation became particularly alarming in the helicopter sector, where the high returns led to a trebling of the number of machines operating. This increased competitiveness resulted in widespread disregard of Civil Aviation regulations on flight operations, breaches of conditions applying to hunting permits issued by the Forest Service and other land-controlling authorities, and trespass on land of all tenures.

Consequently the Forest Service and the Civil Aviation Division of the Ministry of Transport took concerted action to try to bring more order into the use of helicopters for venison hunting. These measures included strengthening the Forest Service permit conditions, stricter penalties for the abuse of permit privileges, and amendments to the Civil Aviation regulations and safety orders.

When the price of venison fell towards the end of the year growth in helicopter hunting eased as some operators found it uneconomic. The Forest Service believes there is a need for further control of commercial hunting and has recommended to the caucus committee the licensing of both aerial and ground hunters engaged in this activity.

Safari hunting—Safari hunting, which has become established mainly in South Canterbury and which relies on eroded class VIIe and class VIII lands for its animals, runs counter to Government objectives of progressively retiring from grazing severely eroded land held under Crown lease. It is the view of the catchment authorities and the Forest Service that noxious animals should be reduced to the lowest possible number on these lands and all domestic stock removed. Some of this land is so severely eroded that neither domestic nor wild animals can be tolerated.

The conflict of opposing land-use interests achieved prominence last year when the Forest Service declared its intention to reduce thar and other noxious animals on these classes of land. Those engaged in safari hunting objected strongly to this move on the grounds that a major reduction of animals would ruin their businesses. The Forest Service is not opposed to private enterprise catering for tourist hunters, provided land subject to extreme erosion is not used and there is no attempt to harbour noxious animals beyond the safe carrying capacity of the land.

Recreational hunting—Commercial hunting is believed by many to have reduced the opportunities for recreational hunting throughout New Zealand. Some recreational hunters have welcomed the chance to profit from the sale of game, but the true sports hunter has suffered from and resents the lack of animals in his favoured hunting grounds.

While all forms of pressure must be brought to bear against noxious animals on eroded land and where the forest cover has been depleted,

there are areas where low animal numbers can pose so little threat to the land and vegetation that control could well be exercised by recreational hunters. Such areas should not include national parks or any other category of land where the prime object is to preserve native flora and fauna. Should recreational hunting be adopted as the means of control in these limited areas, it would have to be on the clear understanding that commercial or Government hunting would be reimposed if it is shown, by monitoring of the vegetation or animal numbers, that recreational hunting is inadequate to maintain the necessary degree of control.

WOOD SALES

In 1973–74 the quantity of wood uplifted from State forests has been provisionally estimated at 3 685 000 m^3 (130 million cu ft), and revenue from sales of standing trees and prepared logs reached the record figure of $27.1 million, these being increases of 5.3 percent and 42.2 percent respectively compared with last year.

With the strong overseas market for unprocessed logs, this year's revenue could have been much higher. However, consistent with past and present policy, these overseas market opportunities have been partly foregone to ensure that adequate wood was offered for local processing.

The major new sale completed during the year was from the lower Coromandel region, with approximately 2.3 million m^3 (80 million cu ft) being offered over a 20-year period. This long-term sale was awarded to the Fletcher Timber Company, which will construct a sawmill and particle board mill near Thames. In addition to this main sale provision has been made to advertise smaller volumes annually to meet most if not all of the wood needs of existing sawmillers in the district. Other new sales have been made from Waipoua and Glenbervie Forests in Northland, Gwavas in Hawke's Bay, and Ngaumu in the Wairarapa as these forests reach maturity.

Sales procedures—Although the Stabilisation of Prices Regulations 1973 do not bind the Crown, the Forest Service in administering the sale of State forest wood is observing a policy designed to give effect to both the spirit of the legislation and the Government's desire to hold price increases in such an important area as wood supply, within reasonable limits. The following policy has been implemented during the currency of the Stabilisation of Prices Regulations, which are due to expire on 30 June 1974:

- Short-term sales of wood (1–2 years) are made by tender as previously. Where the material under offer is clearly different in terms of species, size, and quality from that previously sold from the particular locality, or is being offered for the first time, tenders are used to set the price. However, where the wood is in all respects the same commodity as was previously sold from the locality, application of the tendered price is being deferred, but with provision for review at 30 June 1974 in the light of circumstances then prevailing. Current prices are being charged during this standstill period.
- In long-term sales entered into before the introduction of the regulations, price increases arising from revaluations due after 14 November 1973 will not be applied before 30 June 1974, when the position will be reviewed.

Observance of the above pricing policy in selling State forest wood results in the Government again voluntarily foregoing income at a time when costs of establishment, tending, and management of the nation's exotic forest estate are rising rapidly.

FOREST INDUSTRY DEVELOPMENTS

Most new forest industry developments are export oriented. Announced expansions of the industry for the next 5 years include major increases in the production of mechanical and chemical pulp and newsprint, as well as sawn timber, plywood, medium density fibreboard, and particle board. All of these expansions are expected to contribute to exports. Though there will be a reduction in the export of unprocessed logs by those companies seeking to expand in processing, and from State forests, the rate of reduction will doubtless be tempered by the higher prices that forest growers are now receiving for export logs.

A current trend in pulp production is toward refiner groundwood pulping. World markets are opening up for this type of pulp, especially as a valuable filler in paper making to provide opacity and to reduce the usage of more expensive pulps. Full chemical pulping, as by the kraft process, requires a minimum of some 0.9 million m^3 (approximately 30 million cu ft) a year of low-cost roundwood and wood residues. No new large concentrations of exotic wood supplies of this order are expected until the 1990s at the earliest. For refiner groundwood pulping the minimum wood requirements are much smaller than those needed for the full chemical process, and the pulp yield per unit of wood can be doubled. Furthermore, there is the prospect of making mass produced papers, such as newsprint, with or without some chemical pulp and achieving major cost savings by avoiding the drying and reslushing costs that are associated with partial processing to market pulp. There are fewer effluent problems in refiner groundwood pulping than in chemical pulping and this will undoubtedly lead to less criticism on environmental grounds. On the other hand electricity consumption is very high, although some reduction is possible through recent technical advances with the related thermo-mechanical pulping process.

Studies of prospective wood supplies for new integrated industries with wood residues suitable for refiner groundwood pulping indicate that manipulation of the exotic softwood supply forests may be justified in order to bring forward the start-up date of pulp and newsprint plants by adding small roundwood to regional supplies of sawmill and factory waste. Such management changes could include the interim use of short-rotation crops in situations where exotic forests are being expanded and the volume of residues normally used for pulping is as yet insufficient on its own to meet the immediate levels required. In these situations the contributions from State forests could have an especially important role. In planning opportunities for new forest industries careful consideration has to be given to how much wood within a particular region can be released for sale at an early date rather than held over to produce saw logs and veneer logs. The value of a crop increases markedly as it matures, and premature felling, particularly of radiata pine in those years when it is growing fastest, gives a much lower return to the grower. Thus, pressure for the State to bear the brunt of earlier start-up dates for pulp and paper production needs to be resisted (particularly where

contributory private resources are not managed in the same way) unless it can be clearly demonstrated that there are compensating regional and national benefits.

COMMERCIAL DIVISION

Large companies in the sawmilling industry are increasingly diversifying their product manufacture and entering the retailing field, while many smaller sawmillers operate wholly or partly at retail rates from the mill site. The Commercial Division of the Forest Service must follow these trends if it is to remain competitive and progressive.

Negotiations are proceeding with a view to transferring the New Zealand Railways sawmill at Mamaku, near Rotorua, to the Commercial Division. This would not only provide access to the division's sawmilling and marketing expertise, but would have the major advantage of using Waipa's manufacturing and processing facilities for upgrading and extending the range of the Mamaku mill's output.

It is desirable for the Forest Service, which holds a large part of the wood resources in the Otago region, to involve itself in evaluating the various manufacturing options for a reconstituted wood industry in that area. A primary source of raw material lies in the residues of Conical Hill sawmill. In association with private enterprise the Forest Service is undertaking such an investigation, and in the agreement covering this the way is left open for a possible Government shareholding in any final venture and entry of other partners.

In 1973 the sawmilling industry as a whole experienced one of its best trading and production years. In line with this situation the tax paid profits of the Commercial Division for the year ended 31 December 1973 rose to the record level of $1,444,000. However, it is doubtful whether this high level of profitability can be sustained under more normal conditions without the benefits of export tax concessions, which are being progressively reduced. It would therefore be prudent, in order to protect future profitability, to follow industry trends by widening the manufacturing and trading base of the Commercial Division along the lines mentioned above.

PRODUCTION FORESTRY

MANAGEMENT

Regional management plans and forest working plans—State forest regional management plans are prepared for groups of forests having the same broad management objectives and, with the Minister of Forests' approval, become the formal authorisation for all management activities.

Two more regional plans were approved during the year, bringing the total to four. One, comprising 39 330 ha of forests, is essentially designed to supply the greater Auckland area with exotic timber, but also to provide a number of recreational opportunities in coastal forests. The second, of 116 037 ha and including a forest park of 69 941 ha sets down multiple-use objectives for forests on the Coromandel Peninsula.

Working plans have been signed by the Minister of Forests for four areas of Maori land leased for afforestation.

Cutting plans—The first cutting plan using computer-based forest simulation techniques was developed for the State forests of the Bay of Plenty region. This cutting plan tested such management aspects as changing the rotation age of species and growing stands according to newer silvicultural concepts designed to maximise financial returns. The ability to test a range of options allows a better understanding of the forest resource than has hitherto been possible with manual methods. The allowable cut within specified management objectives has been set for the next 5 years, and a good indication of possible yields is available up to the year 2000. By taking full cognisance of existing commitments in the models, surpluses available for further sales are identified.

The cutting plan and the associated management proposals are the basis of regional management planning in areas with established exotic resources and the computer techniques available for this type of planning will be progressively used in other regions, beginning with Nelson.

Regional development planning—Last year's annual report highlighted the sound contribution which forestry can make to regional economic and social development. Studies on this subject are continuing and results will be expressed in a series of forestry development plans for planning districts. During the past year the first development plan (for North Canterbury planning district) was completed and will be published.

A draft development plan for Otago planning district has been prepared; this plan goes further into the evaluation and measurement of the regional development effects of forestry.

East Cape-Poverty Bay scheme—Mangatu Forest, in the headwaters of the Waipaoa River, was started in 1961 with the main aim of stabilising the upper catchment, an area subject to earth slumping under pastoral use. The East Cape - Poverty Bay scheme, of which this forest was the first stage, envisages planting up to 100 000 ha of critical headwater catchments, at some 2000 ha annually; this annual target should be reached in 1974. In 1973 1887 ha were planted at Mangatu and Ruatoria Forests, the latter being located in the headwaters of the Tapuwaeroa River, where planting began in 1970. Progress in this scheme depends on acquiring this unstable land; a larger allocation of finance will be required to meet future targets.

Inset

The critical headwaters' scheme complements an extensive soil conservation scheme for the foreland country, where the predominant land use is pastoral farming. During the year an assessment of the foreland was made by the Ministry of Works and Development and the priorities for conserving soil and arresting erosion have been redefined. It is estimated that there are 48 000 ha of highly eroding land requiring urgent stabilisation and another 18 000 ha of lower priority erosion-prone areas. Afforestation of substantial areas will be required to restore their stability and to safeguard downstream values.

Climatic damage to forests—A climate event unusual in the New Zealand forestry scene is damage by heavy snow. During August 1973 a particularly heavy snowfall blanketed Canterbury and severely damaged young and old stands in Geraldine, View Hill, Ashley, and Omihi Forests.

Snowdrifts were up to 5 m deep in some forests. Most severe damage appeared in Ashley where treetop breakage in stands of merchantable size was spread over approximately 200 ha. About 28 300 m^3 (1 million cu ft) is being logged before it is damaged further by fungi.

Forest diseases—Since large-scale control operations first began in New Zealand in 1965 considerable expertise has been gained in aerially spraying stands infected by *Dothistroma pini* and its control has become a matter of routine in growing and managing forests. Treatment costs have been held by improved operating efficiency and active research over the last 8 years.

In 1973, 13 750 ha of State and private forests were sprayed at a cost of less than $7.50 per ha.

For some 10 years the presence of the Swiss needlecast fungus (*Phaeocryptopus gaeumannii*) has been observed in Douglas fir. It is fairly widely distributed in the central North Island; some provenances are less affected than others. Research is proceeding into a number of facets of the potential problem posed by this fungus.

Two species of poplar rust of the genus *Melampsora* appeared on poplars in Northland and Taranaki early in 1973 and quickly spread through the North Island. Initially the American poplar leaf rust (*M. medusae*) was identified, but shortly afterwards the presence of the European poplar rust (*M. larici-populina*) was also confirmed. Attempts to contain these diseases by destroying infected trees and restricting the movement of all varieties of poplar trees from the North Island to South Island under provisions of the Forest Disease Control Regulations 1967 were not successful. The rusts have now been found throughout much of the South Island.

Poplars are not used to any great extent in this country for wood production and the diseases are not serious from this point of view. What is serious is that the rusts have affected a wide range of clones used for soil and water conservation, shelter, and amenity. Fortunately, some resistant clones have been identified by the Plant Materials Centre, Palmerston North.

Acquisition of land—During the year, 17 064 ha of land was acquired for production forestry and 8732 ha for protection, recreation, and other environmental purposes. Two nursery sites were bought, one at Cambridge to meet the bulk of the Auckland and Rotorua Conservancies'

tree requirements, and the other at Edendale in Southland Conservancy to replace the unsuitable Milton nursery.

Leasing of Maori land—A lease has been agreed to by the trustees of 19 420 ha of Maori land surrounding Lake Rotoaira, and 250 ha was planted this year. On the Parengarenga, Tainui, Lake Taupo, and Awahohonu leases a further 2980 ha was planted.

SILVICULTURAL OPERATIONS

Totals for planting, etc., in this section are all provisional.

Planting—The area of new planting in State forests (including leasehold land) was 20 790 ha (51 370 acres), an increase of about 3430 ha (8475 acres) over 1972. Details are shown in Appendix 2. The private sector planted an estimated 20 510 ha (50 680 acres), making a national new planting total of 41 300 ha (102 000 acres), exceeding the previous highest total, in 1928.

Restocking—The area of logged exotic forest that was replanted in 1973 was 5550 ha (13 710 acres).

Species planted—Ninety percent of the new planting was with radiata pine, the balance consisting mainly of Douglas fir and Corsican pine.

Pruning—The area pruned was 10 720 ha (26 490 acres); over 95 percent of all pruning was applied to radiata pine and confined to the butt log of dominant trees.

Thinning—Thinning was undertaken on 12 490 ha (30 850 acres). Two-thirds of all thinning was without recovery of wood. Non-utilisation thinning is associated with pruning of radiata pine and is done to concentrate growth of wood on the most vigorous, healthy, and best formed trees. These two operations are carried out early in the growing cycle of the crop to maximise forest profitability.

Clear felling—The area of exotic State forest clear felled during the year was 5300 ha (1300 acres) yielding about 3 million m^3 (106 million cu ft) of round wood. About two-thirds of the clear felled area was in the Bay of Plenty, where a wide variety of domestic and export markets are supplied.

Logging—Despite rising labour costs and additional costs arising from paying much greater attention to environmental and conservation requirements, increases in the cost of logging have been kept small by more intensive planning and supervision. More powerful and reliable equipment is also assisting the continuing trend of increased man-hour productivity.

The productivity of both labour and machines has continued to improve. A logging survey covering the 8 years from 1965 to 1972 shows a 50 percent increase in man-hour production for major clear-felling operations by wage workers in exotic plantations. In the same period logging costs per unit of output for all exotic logging operations were held to a 33 percent increase as a result of increased productivity at a time when award rates of pay increased by 86 percent.

Inset*

EXTENSION FORESTRY

Demand and targets—The area planted under the forestry encouragement schemes has doubled at 2-year intervals since 1968. At that time the programme appeared to have stabilised at about 1000–1200 ha (2500–3000 acres) per year, but the introduction of the grant scheme in 1970 has led to rapid growth. Last year 7040 ha (17 395 acres) was planted, 5620 ha (13 855 acres) under the grants scheme and the remainder under loans mainly to local authorities.

The goal of encouragement of afforestation may thus be considered to have been achieved and some review of the future of these successful schemes is now due. In this respect a gradual change in the type of participation is to be noted. During the year two investment groups invited participation by small investors in large afforestation schemes for which grants had been approved. The change in emphasis from the individual farmer to the larger group investment is illustrated by the fact that next year a quarter of the anticipated 10 000 ha (25 000 acres) of planting will be by 8 of the 520 active grantees. These eight are either co-operatives or companies.

Labour and expertise—A major concern in recent years has been the lack of skilled labour and management expertise to establish and service this rapidly expanding forest estate. An accumulation of untended, low-quality forest, as occurred following the forestry boom of the 1920s and 1930s must be avoided. Fortunately over the last 3 years there has been a gradual build up of contractors. The larger grants and loans can support managers or consultants and two farm forestry associations are now actively investigating the feasibility of co-operative organisations to provide the expertise and manpower to develop the smaller farm woodlots. In the long term the aim of co-operatives will also be to develop a marketing service for members.

Wider application of farm forestry—At present the establishment of farm woodlots is generally carried out separately from farm development. As the concept of closely integrated farming and forestry land use becomes accepted, and its value in widening the product base of individual farmers is better appreciated, there could be a trend to including forestry in overall farm development plans. This planning should include loan finance for forestry as well as other development requirements, particularly where it is practicable to combine grazing and forestry. A close liaison between the various advisory bodies and the lending agencies will be needed. Many landowners are at present unable to develop woodlots because of their inability to raise loan finance for forestry from the traditional agricultural lending bodies.

Forestry/grazing—In order to demonstrate better land use by a combination of farming and forestry, plans are being developed for the Forest Service and the Department of Lands and Survey to manage a number of properties co-operatively. Projects being planned include development of grass on unimproved land before planting, planting moderately well developed but reverted grassland, and inducing grass to grow between widely spaced young trees grown on a short rotation. The managerial information gained from these projects will supplement the results from Forest Research Institute trials and will be of value to private landholders wishing to diversify to forestry.

FIRE CONTROL

Last year was exceptionally dry and the fire hazard was accordingly high. Only 1914 and 1930 were recorded as years of comparable drought. As a result the 1972–73 fire season in Wellington, Nelson, Marlborough and Canterbury extended well into the winter. The 1973–74 fire season began prematurely, and it was soon apparent that severe drought also existed in the upper North Island. Fortunately during the peak hazard period, which lasted until heavy February rains, the winds were generally light. County fire authorities imposed bans on burning, and forests in the Tongariro Ranger District were closed for a period.

A major loss was the destruction of 260 ha (640 acres) of plantation in Mohaka State Forest by a fire carelessly started on a neighbouring property.

Several fires in native forests, including a large one in Tongariro State Forest, appear to have been either deliberately lit or caused by gross carelessness. Native forests were particularly dry, and deep-seated fires were difficult and expensive to suppress. Suppression of the Tongariro fire for example cost $22,000.

The Forest Service put out 164 fires and gave assistance to other fire authorities as the need arose. In addition there were 216 controlled burns embracing almost 25 000 ha (62 000 acres) on land being prepared for new planting or restocking. With the help of the Meteorological Service an index has been introduced which is designed to predict conditions that will ensure proper dispersal of smoke.

Lucerne on firebreaks in Canterbury forests—Planting of lucerne on firebreaks has been continued in Balmoral Forest and has started in Eyrewell Forest. At Balmoral it has been established on 126 ha of an eventual 380 ha (four percent of the forest area). Lucerne remains fairly green and fire resistant throughout dry summers. The crop is sold standing for hay or for harvesting of seed. Lucerne is fairly expensive to establish and maintain, but returns from it are attractive and the firebreaks are being put to productive use.

ENVIRONMENTAL FORESTRY

FOREST PARKS

Details of gazetted and approved forest parks are contained in appendix 5.

Advisory committees have been appointed in terms of the State Forest Parks Regulations for eight parks and one functions under the Minister's general powers to appoint advisory committees. Nominations are being sought for an interim advisory committee for the proposed Catlins State Forest Park. During the year committees were formally appointed for Kaweka and Rimutaka Forest Parks.

All committees have functioned well, but issues involving roading, walking track standards, signposting, and wilderness areas have commonly arisen with different committees. There is, however, an increasing acceptance of the Forest Service's insistence on catering for the needs of all park users rather than just the experienced tramper.

The promulgation of legislation enabling State forest land to be dedicated to a particular use has prompted the Forest Service to look critically at its preliminary zoning classifications for State forest parks to ensure that these are in keeping with those that may apply to other State forest land.

MOUNT HUTT SKIFIELD

A skifield of considerable potential is being developed on State forest near Methven. A private company has been authorised to construct an access road and provide T-bar tows and other facilities. Present indications are that the field will have the longest ski season in New Zealand; in 1973 skiable snow was available from May to October. The new tows will give skiers ready access to a 2000 m ridge above the Rakaia River.

OVERUSE OF HEAPHY TRACK

Statements by the Government of the possibility of a road being constructed from Karamea to Paturau along the line of a major part of the Heaphy Track generated considerable public interest in the value of the track as a walkway of national importance. Environmentally conscious groups dedicated to retaining the track as a walkway kept the issue alive by means of publicity using all the media and this no doubt influenced many people into walking the track this summer who would not otherwise have done so. There had, of course, been increasing public use of the track since the formation, in 1970, of the North-west Nelson State Forest Park, with a consequent upgrading both of the track and the huts along the route.

So evident had the problem of poorly equipped, poorly-led, and inexperienced parties on major mountain tracks become that the National Mountain Safety Council formed a sub-committee to consider the problem of overuse of the major tracks in New Zealand; particular emphasis was placed on the Heaphy, Routeburn, and Milford Tracks. It was recommended that track wardens on the Heaphy Track operate a user questionnaire over the summer months so that the numbers and

types of parties could be gauged, and information assembled as to the types of publicity and remedial action required.

Until the survey is completed no figures covering usage of the track will be available, but over the December 1973 to January 1974 period at least 1170 persons are known to have walked the track and many more walked only part way.

Overcrowding of huts was alleviated to some extent by the erection of tents nearby and the construction of simple shelters along the route between huts. The Forest Service is seriously considering making the track a one-way walk or instituting a hut-booking system. Neither alternative is as simple to implement as it may seem, because the public has entry as of right. No decisions will be made until the results of the track survey have been analysed. There is certainly no wish to dissuade properly equipped and well-led parties from walking the track; but it does require a moderate degree of experience and parties should carry a small tent to make them independent of hut accommodation. Because of overuse, reforming part of the track is now a necessity; machines will have to be used.

PROGRESS OF CATCHMENT SURVEYS

For nearly two decades it has been the policy of the Forest Service to concentrate official control effort on catchments having high erosion hazard associated with high downstream values at stake. Multi-disciplinary surveys undertaken by the Protection Forestry Division of the Forest Research Institute initially established the order of priority for catchments requiring treatment and periodic resurveys have monitored the progress of the work carried out in these catchments.

Recent resurveys completed in the Wairau, Waimakariri, and Hokitika catchments have shown conclusively that the intensive control effort over 10 years in these priority areas has resulted in a significant reduction of noxious animal populations. In all of these areas red deer, the main problem animal, have been reduced to very low numbers; often by 50 percent and sometimes as high as 90 percent. A substantial reduction of other animals—mainly goats and pigs or chamois and thar—which have contributed to the depletion of the vegetation, has also been achieved. In these catchments numbers of animals killed per hunter per day are well down and the Forest Service is now confident that control techniques are adequate to deal with the problem.

As expected, because it takes time to recover, the response of the vegetation has not been so dramatic, but overall there are clear indications of a lessening of browsing pressure. The information now available from these scientific surveys will enable the Forest Service to maintain control, whether this be by official hunters, commercial or sport hunters, or a combination of these, at the most economic and efficient level to ensure the continued improvement now apparent in the condition of these catchments.

THAR CONTROL ON ERODING LAND

Surveys recording use by all species of animals of eroding mountainlands begun last year have continued in North and South Canterbury. Control has been taken a stage further in South Canterbury with co-ordinated operations last winter against thar. All landholders

in the upper Waitaki and Rangitata catchments where animal populations were unacceptably high on eroded land were given notice to effect reductions or have these undertaken by the Forest Service. All except three complied although one other runholder refused to allow in meat recovery operators, thus requiring expenditure of Forest Service funds. About 3200 thar were removed from eroded land, most of them recovered by commercial helicopter operators working under Forest Service supervision. This included a minor voluntary reduction by a safari operator in what in effect was a herd improvement measure.

REHABILITATION OF MOUNTAINLANDS

While guidelines have been drawn up for the selection of priority areas for rehabilitation of eroded lands within State forests, national priorities on land of all tenures have yet to be determined on the basis of catchment condition surveys. A joint policy statement of the National Water and Soil Conservation Organisation, the Department of Lands and Survey, and the New Zealand Forest Service that is supported by Federated Farmers has been endorsed by the Government for guidance in the future use of South Island high country, with particular reference to retired run country and unoccupied lands of the Crown.

Much of the class VIIe and VIII eroded land requiring protection and rehabilitation lies outside State forest. The Forest Service has a statutory responsibility for research in mountainlands and for the control of fire and noxious animals in land of all tenures. It has acquired considerable experience in these fields as well as in the revegetation of high-altitude land, and is thus well placed to co-operate in the preparation of management plans for this class of land and to act on an agency basis.

PROSPECTING AND MINING IN STATE FORESTS

Interest in mining has increased markedly in recent years, following a world-wide trend triggered by shortages of raw materials. As mineral deposits could often occur in State forests many prospecting and mining applications are now being applied for.

The Forest Service attitude to mining may be described as being sympathetic to the recovery of minerals as long as primary objectives of management are not adversely affected, and subject to acceptance by mining organisations of any conditions imposed. The policy of the Forest Service is to accommodate the maximum number of uses of land and forests compatible with the primary objective, thus fulfilling a multiple-use policy.

Whereas prospecting may be carried out, mining would only be approved if it is done in a way that minimises disturbance. Erosion prone and critical areas are excluded from applications; a special problem is created by sluicing, which could harm water quality. The Government's full environmental impact reporting procedure is followed for mining applications affecting State forest land.

OPOSSUM CONTROL AND BOVINE TUBERCULOSIS

Control measures to lessen and if possible eliminate the risk of bovine tuberculosis infection in cattle in Buller County have reduced opossum numbers to very low levels. The results from systematic tuberculin testing now indicate a general lowering of the incidence of the disease.

Disease surveillance surveys in Inangahua and Grey Counties have established a similar pattern of infection in parts of these counties. To achieve total coverage the Minister of Forests has declared Buller, Inangahua, and Grey Counties to be special areas for the purpose of opossum control. Aerial poisoning of forest margins to kill opossums and prevent the reinfection of clean stock on adjoining farm land is a necessary step in eliminating bovine tuberculosis in these counties.

COMMERCIAL DIVISION OPERATIONS

Detailed accounts for the year ended 31 December 1973 with explanatory notes appear in appendix 14.

PROFIT AND APPROPRIATIONS

The tax-paid profit of the division at $1,444,131 is an increase of 220 percent on last year's $449,765 and is equivalent to a tax-paid return on notional shareholders' funds of 36.8 percent. This marked improvement is partly due to the extremely buoyant demand for sawn timber and timber products in domestic and export markets, which has enabled both Waipa and Conical Hill sawmills to saw to maximise grade outturn and realisations. Other contributing factors are an increase of 26 percent in sawn timber output and the much higher prices being obtained for exports.

Though this is a most satisfactory trading result, it cannot be taken as a reliable indication of long-term profits in sawmilling and wholesale trading activities alone. In particular, the contribution made by export tax concessions must be recognised. From 1974 these will steadily reduce because major expansion of exports is not likely to prove possible in the near future.

In determining the dividend to be declared this year a number of considerations have been taken into account, especially the possibility that stabilisation measures will prevent the full recovery of rapidly escalating costs and the need to finance the continuing modernisation and re-equipping programme at both mills. It has therefore been decided to declare a dividend of 12½ percent, an increase of 2½ percent on that paid in 1972. Profit will be appropriated as follows:

	$
Tax-paid profit	1,444,131
Transfer to fire insurance reserve ..	150,000
Available for distribution ..	1,294,131
Dividend at 12½ percent ..	244,917
Retained profits	1,049,214

PRODUCTION

Sawn timber production increased by 15.1 million bd ft to the record level of 72.3 million bd ft. Provided machinery arrives on time and adequate labour is available, the programme of re-equipping for both sawmills, which is now in its final stages, will allow some production increase in the calendar year 1974 and a major increase in later years.

STUMPAGES

With effect from 1 April 1973 stumpages paid by Waipa and Conical Hill increased by 45 percent and 55 percent respectively. Current average rates for sawlogs are $2.83 per m^3 (8c per cu ft) for Waipa and $2.05 per m^3 (5.8c per cu ft) for Conical Hill.

MARKETING

Throughout the year markets placed no limitations on sawn timber manufacturing levels. As a matter of priority the extra production was put on the domestic market. Considerably more timber could have been sold overseas had supplies been available, and this strong demand is expected to continue. It is considered important to maintain the hard won export markets which the division now has, and a policy of preserving established export trading commitments has been followed.

In contrast to export prices, local market returns for lower grades of timber are still considerably below the average cost of production. Thus high export prices are subsidising domestic timber prices to a degree not previously experienced, particularly in an organisation engaged substantially in wholesale trading.

PRODUCTION, CONSUMPTION, AND TRADE

Because of the earlier publication of this year's annual report totals given in the following sections "Total Wood Production," "Sawn Timber Production," "Pulp and Paper," and "Panel Products" are for the 1973 calendar year instead of the customary March ending year.

TOTAL WOOD PRODUCTION

Total removals of roundwood from all forests are provisionally estimated at a record 9.1 million m^3 (320 million cu ft), a 12 percent increase on the 1972 total of 8.1 million m^3.

SAWN TIMBER PRODUCTION

Production of sawn timber is estimated from sawmill surveys to be 1 999 000 m^3 (847 million bd ft), the highest total so far recorded. This was 14.5 percent higher than in 1972, when 1 746 000 m^3 was produced.

PULP AND PAPER

Pulp production also reached a new high level of 729 900 tonnes (718 400 tons), 139 000 t more than in the previous year.

Total paper and paperboard production during the year increased by 52 200 t (51 500 tons) to 511 000 t (503 000 tons). Production of newsprint fell by 10 700 t to (10 500 tons) to 207 200 t (204 000 tons). Other paper and paperboard production amounted to 303 800 t (299 000 tons).

PANEL PRODUCTS

Panel products production again increased: particle board by 34 300 m^3 to 101 200 m^3 (57.2 million sq ft, $\frac{3}{4}$-in. basis); plywood by 3800 m^3 to 33 200 m^3 (75.1 million sq ft, 3/16-in. basis); and fibreboard by 500 t to 46 500 t (45 700 tons).

FOREST SERVICE PRODUCTION

During the year ended 31 March 1974 an estimated total of 3 685 000 m^3 (130.2 million cu ft) of roundwood was extracted from State forests, an increase of 185 000 m^3 over the previous year. Of this increase 156 000 m^3 was in the form of smallwood.

Production of wood from exotic forests increased by some 148 000 m^3 to 3 114 000 m^3 (110 million cu ft) whereas production from indigenous forests rose by 37 000 m^3 to 571 000 m^3 (20.2 million cu ft). The greatest increase was in Auckland Conservancy, where production rose by 100 000 m^3. Rotorua and Southland also showed large increases of 48 000 m^3 and 28 000 m^3 respectively. Other conservancies showed only minor production increases, except Canterbury, where 19 000 m^3 less than in 1972–73 was removed from State forests.

EXTERNAL TRADE

The latest available official statistics for trade in forest products are for the calendar year 1972.

Value of exports—The total value was $81.4 million, $2.8 million more than for the 1971 calendar year.

Exports of sawn timber—The volume was 240 000 m^3 (101.8 million bd ft), compared with 304 000 m^3 (128.8 million bd ft) in 1971. The total value was $9.7 million, compared with $12.3 million in 1971.

Exports of paper and pulp—Paper exports increased to 152 317 t (149 918 tons), the major rise being in paper other than newsprint and paperboard. Exports of newsprint were 2470 t lower than in 1971. Pulp exports rose by 18 301 t (18 013 tons), and returns at $11.5 million were 18 percent higher than in 1971. Australia remained the principal market.

Exports of wood chips—Trade continued to grow, the value of exports increasing from $2.2 million in 1971 to $2.5 million.

Exports of logs—The volume of exports rose slightly to 1 855 000 m^3 (65.5 million cu ft) and their value from $28.5 million in 1971 to $30.6 million. Exports have, however, declined in 1973.

Imports of forest products—The value was $21.7 million c.d.v. (current domestic value in country of origin), compared with $18.3 million for the previous year. The main suppliers were Australia, the United Kingdom, and the U.S.

RESEARCH AND DEVELOPMENT

RESEARCH

The *Report of the Forest Research Institute for 1973,* published separately, deals fully with the year's research programme.

Logging research—Consultations with the private sector of the logging industry have continued during the year and a basis for the establishment of a logging industry research association has been agreed on. The proposals are under consideration by the Government.

Research on beech—Research on beech has increased during the year. A significant feature has been the adoption of a positive policy of involving the Protection Forestry Division of the Forest Research Institute (FRI) in erosion and slope stability investigations in production forestry at any altitude. Previous policy was to concentrate on mountainland over 900 m above sea level, where the problems are most severe. This additional responsibility must be matched by staff increases.

Research and the environmental issues—The three divisions of FRI have been increasingly called upon to investigate and advise on matters pertaining to the protection of environmental values, and there is no doubt that the demand for this type of work will continue to grow. The operational divisions of the Forest Service look to FRI in the same way as to the Department of Scientific and Industrial Research and other authorities for objective scientific advice on matters that are within its sphere of competence.

Research programme 1974–76—FRI plans its research programme in 3-year periods; this allows for a regular review that can take into account any changes in the needs of protection forestry, production forestry, and the forest-products-based industries. Before the new programme is drawn up a broad range of interests is consulted and the draft programme is considered by the three research advisory committees before being finalised. In this way every effort is made to ensure that research is related to New Zealand's real needs.

Communication of research results—Research results are traditionally communicated by the publication of research papers by the scientist—yet this appears to be one of the least effective ways of getting them known. FRI organises regular symposia at which an attempt is made to bring out and discuss all that is known of a specific subject. These have been quite effective, but it is still necessary for management to follow them up by analysing how the knowledge brought out is best put to use.

Two colour movies have previously been produced on FRI's work; a new one, on forest conservation research, has just been completed.

In the last year a newsletter entitled *What's New in Forest Research* has been produced monthly. It sets out research findings in simple and practical terms and has received widespread favourable comment.

These activities do much to bridge the gap between knowledge and practice, but to gain full advantage from the investment in research even more effective dissemination of research results is needed.

Research buildings—Approval has been given for the preparation of sketch plans for Stage III of the new building complex for the Forest Research Institute at Rotorua. Tenders have been called for a research building to accommodate the Protection Forestry Division of the institute; it is to be close to the School of Forestry on the Ilam campus of the University of Canterbury.

WOOD USE

Timber inspection and quarantine—The Forest Service has started work on determining acceptable fumigants, acceptable concentrations of specifics, and methods of application for the fumigation of pest-infested imports. The equipment being designed will not only be used for these evaluations but will provide insurance against the risk of serious outbreak of wood borers or the inability of private companies to cope with pest eradication of timber and other imported wood products.

There has been a tremendous growth in the use of containers in transporting goods. This has quarantine implications and the Forest Service is having to adapt itself to inspecting goods at the point of destination rather than at ports in order to meet the objectives of quick turn-round of ships and prompt despatch of goods to consignees.

Standards—Although the Forest Service has played an active role on a number of standards committees concerned with timber and wood products, progress in finalising standards is still slow. The most important of these committees and their work are as follows:

- Timber Specification Committee which has produced a standard for the specification of timber and wood products for publication in 1974. This standard is intended to serve as a means of complying with the relevant requirements of New Zealand Model Building Bylaws NZS 1900, and to provide authoritative guidance in the drawing up of specifications.
- Light Timber Frame Committee. This committee is revising the section of NZS 1900 concerned with light timber frame construction not requiring specific design. This includes virtually all house and flat construction. The revised standard, which will be in metric units, should lead to some rationalisation in the use of timber framing.
- Timber Design and Construction Committee. The revision of the timber design section of NZS 1900 will provide design stresses for two visual stress grades in radiata pine, Douglas fir, and larch and for one visual stress grade in native species. Grading rules are currently being prepared.
- Timber Ladders Committee. A Forest Service survey showed that few manufacturers were adhering to the present standard for timber ladders because of shortcomings in it. The new standard should give manufacturers greater scope in designing and manufacturing ladders.

Research into the use of timber in building—During the year a Timber Industry Research Committee was formed to co-ordinate research into the use of timber in building and to promote ideas as to what research should be carried out. The committee, chaired by the Executive Director

of the Timber Research and Development Association, includes representatives of the Forest Service, Building Research Association, New Zealand Sawmillers' Federation, and New Zealand Master Builders' Federation. Initial emphasis has been on light timber frame construction. A sub-committee is examining economic aspects of the use of timber in wall-frame construction, including the economics of green versus dry timber. In particular the sub-committee will consider the implications of the results of the current Forest Research Institute programme on wall frames.

Investigations into southern pine timber—Considerable volumes of timber of southern pines (*Pinus taeda, P. elliottii,* and *P. palustris*) will be coming on to the market in the near future. As little investigational work has been done in the past on utilisation aspects of southern pines grown in New Zealand, a research programme was initiated in 1973. Visual and machine stress grade studies on sawn timber were carried out to determine their characteristics for framing and structural uses. In addition mechanical testing was carried out by the Forest Products Division, Forest Research Institute. Kiln drying and air drying studies are currently being undertaken. The results of all these studies should indicate whether southern pine timbers can be graded and marketed as radiata pine or whether separate marketing and/or grading rules should be considered.

Bark utilisation—An investigation into the current use made of bark was initiated at the request of the Forestry Development Council. A nation-wide survey was undertaken to determine quantities of bark produced and current methods of disposal. It showed that the greatest problems in bark disposal will be faced by small and medium-sized sawmills now debarking logs in order to produce clean chips from their wood waste. The most important current use for bark is as an industrial fuel, which takes 58 percent of production. A promising use is as a soil amendment.

End-use survey—Field work for phase I of the end-use survey covering use of wood and wood-based panel products in domestic dwellings has been completed and results are expected to be published later this year. The field work for phase II of the survey, usage of wood and wood-based products in commercial buildings, will be completed by September 1974. The survey of the manufacturing industries, which is being carried out with the assistance of the Department of Statistics, is almost complete and results will be available in the latter part of 1974.

Utilisation of beech timbers—In view of the proposals for increased utilisation of the South Island beech forests a study was undertaken to provide up-to-date information on the present production, end-use, and potential demand for sawn beech timber in New Zealand. The results of this study will be available shortly.

TIMBER PRESERVATION AUTHORITY

The Timber Preservation Authority has found it necessary to harden its attitude towards defaulting preservation plants. During the year approvals for four plants were restricted, four were suspended, and one was revoked. The authority also decided to consider prosecuting

plants which commit serious breaches of the regulations; this may also apply to merchants who, for instance, sell treated timber with no brands or incorrect brands.

One of the more important amendments to the Timber Preservation Authority regulations has been the provision for TPA officers to enter seasoning sites remote from the preservation plant to inspect, and, if necessary, reject timber unsuitable for treatment. This provision implies that seasoning is an integral and important part of the preservation process.

The authority has amended the specification requirements for core loadings and solution concentrations for softwoods treated with boron compounds. It has been possible to lower both these without reducing the effectiveness of the treatment. A major decision made during the year by the authority has been the defining of copper-chrome-arsenate preservative in terms of active elements, resulting in changes in retentions for these preservatives.

During the year three new preservatives were approved and two are still under consideration. Purveyors again questioned the requirement to furnish full details of formulations for publication in TPA specifications.

The use of timber piles for building is increasing and the authority has made provision in Commodity Specification 2 for treatment for this purpose.

The number of treatment plants and the quantity of produce treated are shown in appendix 12 (c).

ENGINEERING DEVELOPMENTS

Communications—The programme of converting high frequency mobile radio communication stations to very high frequency radio is continuing. Of the 1472 radio transmitting stations in the department 385 are now of very high frequency. About half the total area of planted State forests is now served by this system including Kaingaroa, Golden Downs, and exotic forests in Canterbury. The great improvement in reliability and clarity is resulting in more efficient forest management.

By international agreement all high frequency radio services must either be discontinued or changed from double to single sideband working by 1982. A pilot single sideband high frequency radio network has been put into operation in Westland; initial reports are favourable, indicating improved performance in mountainous areas.

Radio communications has been improved by operator training. Greater use is being made of radios to plan and control forest management, thus reducing vehicle mileages and saving fuel.

Roading—Increased attention is being given to the environmental aspects of forest roading and tracking, particularly when it is visible from main highways or centres of population. Environmental requirements are now being specifically covered in roading specifications with more emphasis being placed on road design and siting to ensure that roading does not contribute to erosion.

Survey and mapping—The proposals for the utilisation of the West Coast beech forests have created a need for topographical mapping

on a scale of 1:10,000 over large portions of a roughly rectangular area of 10,000 square kilometres. Aerial triangulation requires ground control points to be fixed to within an accuracy of 0.5 metre for both position and height. In order to fix these to the required accuracy, the Forest Service is combining its survey resources with those of the Department of Lands and Survey to cover the region with First Order and Second Order control traverses. The new "mini mark" control described in last year's report will be used to great advantage on this project, as will new lightweight electronic distance-measuring equipment.

Need for heavy tractors—In recognition of the growing need for a fleet of modern heavy crawler tractors the Forest Service has a programme for re-equipping with suitable machines, but this programme has been seriously delayed because of the excessively long delay (up to 2 years) in delivery from overseas.

Crawler-type tractors are widely used in forest roading, land clearing, and the construction of firebreaks and dams. Studies have shown that the more powerful modern models are capable of greater work output per unit of fuel than the lighter machines used in the past and are thus more economic.

The policy of opening forests to the public more widely has highlighted the need for immediate and effective means of fighting forest fires. The success of fire-fighting operations depends largely on containing the outbreak by constructing emergency firebreaks at strategic points. The only effective tool for this is the heavy crawler tractor with a bulldozer blade. In dealing with forest fires it is vital, at least in major areas, that heavy crawler tractors are immediately available for firebreak construction.

OTHER ACTIVITIES

RETIREMENT OF DIRECTOR-GENERAL

Mr A. P. Thomson, Director-General of Forests since 1971, retired on 15 March 1974. During his service Mr Thomson held the positions of first Director of the National Forest Survey begun in 1945, Officer-in-Charge of the Forest Experiment Station (now the Forest Research Institute), Conservator of Forests, Canterbury and Rotorua, Director of Forest Management, and Deputy Director-General.

MANAGEMENT SERVICES

During the year a Management Services Section was set up, with responsibility for work study, organisation and methods, and head office electronic data processing (EDP). This grouping of related functions will facilitate more effective use of the specialist staff involved.

The main EDP projects finalised during the year were forest compartment records (for recording data on the stocking of exotic forests) and a survey of wood products used in new houses.

TRAINING

Forestry training and education—The commencement of woodsman training based on Aupouri Forest in Northland marked the first extension of this training for 9 years. The woodsmen are not being accommodated by the department, as in other schemes, but live in the local community and travel to the forest each day. Socially this has many desirable features both for the department and the trainees and their families. At Aupouri training will be provided for 10 woodsmen each year, who will spend 2 years at the training forest. If successful this procedure could be extended to other districts.

In the last few years there has been an unexpected increase in the number of middle-management foresters resigning, principally to take up positions in private forestry. A survey is under way to assess the use of existing forester staff and the requirements for foresters until 1980. In an endeavour to increase the number of foresters 25 traineeships were granted in 1974, seven more than 1973. Several were for undergraduates who had already completed 1 or 2 years of successful study.

Ten forester trainees graduated from the University of Canterbury at the end of 1973. The department has been successful in recruiting two other graduates who studied there. Post-graduate studies within New Zealand were completed by two foresters while another two are continuing their studies. One of the latter began the inaugural 2-year course for the degree of master of science in resource management.

Eighteen ranger trainees completed the Forest Ranger Certificate course at the Forestry Training Centre.

Training for industry—The Timber Industry Training Centre, Rotorua, had another busy year, training 474 course members, compared with 427 in 1972. Provision of a full-time tutor in chain-saw operation and safety has allowed the centre to introduce a full series of

courses for this training. The tutor will also travel to other centres to provide on-the-spot instruction for private industry, local bodies, and other agencies who use chain saws extensively.

Students sponsored to the centre by overseas firms and New Zealand aid programmes came from Australia, Fiji, Indonesia, Malaysia, Papua - New Guinea, and the Solomon Islands.

EXTERNAL AID

The Forest Service has continued to give full support to aid programmes and a number of officers have been made available under multilateral programmes sponsored by such bodies as FAO and under the Government's bilateral aid programmes.

The former Director-General visited Papua - New Guinea and Indonesia on behalf of the Ministry of Foreign Affairs to evaluate possible bi-lateral aid projects in forestry and forest products. In Indonesia an FAO logging and sawmilling project, being undertaken by New Zealand consultants, was inspected with a view to continuing New Zealand assistance under a bilateral aid programme. In Papua - New Guinea training requirements in forestry were investigated and the recommendation made that assistance be offered to sawmill operators to train at the Timber Industry Training Centre at Rotorua.

Following a feasibility study conducted in Indonesia by the Director, Utilisation Development Division, in 1972, it was decided that New Zealand should donate a pressure treatment plant to produce treated power poles. A contract is about to be let for the purchase, installation, and commissioning of this equipment. A recommendation was also accepted that aid should be given in kiln drying and wood preservation; a New Zealand expert from industry has been appointed to direct the project.

A mission was sent to Chile and Peru to assess potential aid projects in these countries under the Latin American Technical Co-operation Programme. The Forest Service was represented by the Conservator of Forests, Palmerston North. A reciprocal mission from Peru recently visited New Zealand and showed special interest in this country's ability to provide technical aid in forestry research and inventory and the establishment of pulp and paper industries.

Continued assistance is being given to Fiji in the establishment of a pine afforestation scheme at Nabou. Currently four departmental officers are seconded to the scheme. Senior Fijian officers involved with the project have been shown various forestry activities in the Bay of Plenty.

A senior scientist visited Tanzania on behalf of FAO to undertake an assignment on plantation economics; this officer has also been to Papua - New Guinea to assist on FAO projects.

For many years the Forest Research Institute has been conducting research into the properties of Pacific Island timbers. Following from this work the Government decided to donate a timber preservation plant to Western Samoa and a contract has been let to a New Zealand manufacturer. The Forest Service has been co-ordinating and carrying out investigations into the possible uses of coconut stems in Tonga.

In collaboration with the Ministry of Foreign Affairs the department organised the New Zealand section of an Australia - New Zealand international training course in forestry. Four of the 11 weeks of the

course were spent in New Zealand, principally to study softwood plantation management. The 20 participants came from Bhutan, India, Indonesia, Laos, Malawai, Nigeria, the Philippines, Sri Lanka, Tanzania, and Thailand. A Forest Service forester was leader for the entire course.

Training and experience in New Zealand for other overseas personnel under the Government's bilateral aid programmes was provided during the year for five trainees from Fiji, one from Korea, and two from Cuba. Subjects studied were forest management, roading, surveying, and tree breeding.

OVERSEAS VISITS

The former Director-General attended the ECAFE meeting on the human environment in Bangkok; he also participated at the Ninth Session of the Asia-Pacific Forestry Commission held in Australia, accompanied by the Senior Forester at Kaingaroa Forest and an assistant Commissioner for the Environment.

The Director of Administration attended the Second Tripartite Technical Meeting on the Timber Industry (Forestry) in Geneva, organised by the International Labour Organisation, and took part in the FAO/ILO/SIDA Consultation on Employment in Forestry, which was held in Thailand and was a follow-up to the Geneva meeting.

The Assistant Director, Marketing Division, visited the Peoples Republic of China as part of the official trade mission. Marketing and business investigations were undertaken in Japan, Korea, the Pacific Islands, and Australia by the Director of Commercial Division, while the Director of Marketing negotiated log prices in Japan and Korea.

Other officers attended: the IUFRO meeting in South Africa; the 16th CSIRO Products Conference in Australia; the 2nd International Plant Pathology Congress in Minneapolis, USA; the International Symposium on Air Quality and Smoke from Urban and Forest Fires in Colorado, U.S.A.; the International Symposium on Forest Fertilisation in Paris; and the 6th Vertebrate Pest Control Conference in California.

The Officer in Charge, Whakarewarewa Forest visited the United States, the United Kingdom, Denmark, and Germany on a David Henry Scholarship to study the recreational and amenity functions of production forests.

APPENDIX 1

Area of State Forest Land as at 31 March 1973*

(Area in hectares)

Conservancy	Permanent State Forest		Provisional State Forest		Total Area of State Forest Land	State Forest Land as Percentage of Total Land Area
	Ordinary	National Endowment	Ordinary	National Endowment		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Auckland ..	320,299	36,628	24,396	1,685	383,009	12.2
Rotorua ..	340,118	132,631	49,491	4,247	526,488	16.7
Wellington ..	522,313	16,781	15,132	1,276	555,503	10.6
Nelson ..	685,134	186,134	218,355	104,684	1,194,307	42.1
Westland ..	357,962	172,104	134,958	58,146	723,172	46.3
Canterbury ..	251,129	1,476	201	..	252,806	6.2
Southland ..	243,025	22,757	188,302	5,560	459,644	6.7
Total ..	2,719,980	568,511	630,835	175,598	4,094,929†	15.4

*Figures for year ended 31 March 1974 not available.
†Excludes 80,483 hectares administered as State forest land.

Reservations and Withdrawals

	hectares
Land placed under State reservation	24,434
Areas withdrawn from reservation comprised—	
For settlement	787
For national parks	2,631
For roads	38
Other	1,370

APPENDIX 2

New Area Planted in State Exotic Forests—by Species

(Area in hectares)

Year Ended 31 March	Radiata pine	Douglas fir	Corsican pine	Other	Total
(1)	(2)	(3)	(4)	(5)	(6)
1952 ..	915	223	287	611	2,036
1953 ..	1,089	344	368	494	2,295
1954 ..	1,157	299	174	364	1,994
1955 ..	1,198	534	194	223	2,149
1956 ..	1,724	486	223	279	2,712
1957 ..	1,514	680	259	380	2,833
1958 ..	1,586	939	409	498	3,432
1959 ..	862	846	599	575	2,882
1960 ..	1,036	680	437	741	2,894
1961 ..	1,926	858	356	761	3,901
1962 ..	2,651	915	603	595	4,764
1963 ..	3,675	749	822	898	6,144
1964 ..	5,075	745	848	775	7,443
1965 ..	5,947	1,571	551	606	8,675
1966 ..	6,115	1,233	844	123	8,315
1967 ..	6,159	1,664	463	302	8,588
1968 ..	7,188	2,008	173	292	9,661
1969 ..	10,240	2,391	272	588	13,491
1970 ..	11,746	2,166	192	683	14,787
1971 ..	12,674	1,435	97	532	14,738
1972 ..	11,795	880	27	311	13,013
1973 ..	15,792	1,107	19	440	17,358
1974* ..	19,479	773	20	517	20,789

*Figures for 1974 estimated.

APPENDIX 3

Establishment and Clear Felling in State Exotic Forests

(a) *Totals for Conservancies*

(Area in hectares)

Conservancy	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1974*	Area Waiting Restocking	Total Productive Area
	New Area Planted	Former Productive Areas Restocked By Planting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Auckland	3,958	706	619	− 55	44,150	1,285	45,434
Rotorua	5,655	3,390	3,543	+120	165,663	4,000	169,663
Wellington	3,434	129	129	−421	40,870	538	41,408
Nelson	2,917	266	498	+361	34,734	243	34,977
Westland	984	4	4	..	7,849	..	7,849
Canterbury	632	858	352	..	24,999	2,248	27,247
Southland	3,209	174	174	−402	32,722	..	32,722
Total	20,789	5,527	5,319	−397	350,987	8,314	359,300

*Figures for 1974 estimated.

(b) *Totals for Both Islands and New Zealand*

(Area in hectares)

Region	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1974*	Area Waiting Restocking	Total Productive Area
	New Area Planted	Former Productive Areas Restocked By Planting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total North Island, year ended 31 March—							
1974*	13,047	4,225	4,291	− 356	250,683	5,823	256,505
1973	16,750	3,303	3,630	− 306	231,209	5,763	236,972
1972	8,004	2,937	3,054	− 807	221,094	6,324	227,418
1971	8,976	2,722	3,113	−1,913	214,014	5,031	219,045
1970	8,494	1,292	2,615	− 541	207,342	3,391	210,733
Total South Island, year ended 31 March—							
1974*	7,742	1,302	1,028	− 41	100,304	2,491	102,795
1973	6,608	1,303	1,032	− 334	92,272	3,459	95,731
1972	5,009	2,011	1,493	− 779	85,727	3,461	89,188
1971	5,762	879	1,291	− 287	80,980	4,534	85,514
1970	6,292	860	1,382	+ 89	75,918	3,353	79,271
Total New Zealand, year ended 31 March—							
1974*	20,789	5,527	5,319	− 397	350,987	8,314	359,300
1973	17,358	4,606	4,662	− 640	323,481	9,222	332,703
1972	13,013	4,948	4,547	−1,586	306,821	9,785	316,606
1971	14,738	3,601	4,404	−2,200	294,994	9,565	304,559
1970	14,786	2,152	3,997	− 452	283,260	6,744	290,004

*Figures for 1974 estimated.

APPENDIX 3—continued

ESTABLISHMENT AND CLEAR FELLING IN STATE EXOTIC FORESTS

(c) *By Forests*

North Island Conservancies

(Area in hectares)

Conservancy and Forest	Stocked Area at 31 March 1972	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1973*	Area Awaiting Restocking	Total Productive Area
		New Area Planted	Former Productive Areas Restocked By Planting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Auckland—								
Athenree ..	626	..	68	34	— 1	659	34	693
Aupouri ..	2,327	1,073	..	6	+ 3	3,397	19	3,416
Glenbervie ..	2,309	190	..	..	..	2,499	..	2,499
Great Barrier ..	41	..	..	..	..	41	..	41
Katikati ..	19	..	..	..	..	19	..	19
Kauaeranga ..	444	..	..	..	..	444	..	444
Mangawhai ..	469	221	..	..	— 2	688	..	688
Maramarua ..	4,455	21	88	146	— 87	4,331	214	4,545
Omahuta ..	492	..	..	..	..	492	..	492
Puhipuhi ..	519	..	8	15	— 16	496	75	571
Puketi ..	108	..	..	..	..	108	..	108
Pureora ..	2,286	226	18	..	— 107	2,423	..	2,423
Riverhead ..	4,117	2	139	205	— 49	4,004	247	4,251
Russell ..	38	..	..	..	..	38	..	38
Tairua ..	6,257	378	..	30	— 13	6,592	498	7,090
Tanui-Kawhia ..	30	16	..	..	..	46	..	46
Tawarau ..	..	24	..	..	..	24	..	24
Waipoua ..	2,128	38	35	49	— 2	2,150	53	2,203
Waitangi ..	1,508	127	..	10	+ 48	1,673	21	1,694
Waiuku ..	1,030	..	47	11	+ 23	1,089	98	1,187
Whangapoua ..	2,211	267	..	..	— 6	2,472	..	2,472
Woodhill ..	5,986	420	42	9	..	6,439	..	6,439
Total ..	37,400	3,003	445	515	— 209	40,124	1,259	41,383
Rotorua—								
Haparangi ..	231	..	..	..	..	231	..	231
Horohoro ..	946	39	..	..	..	985	..	985
Kaingaroa ..	121,939	996	2,405	2,756	+ 86	122,670	4,067	126,737
Lake Taupo ..	3,785	1,416	..	..	— 14	5,187	..	5,187
Mangatu ..	5,890	919	..	..	..	6,809	..	6,809
Marotiri ..	155	..	..	..	..	155	..	155
Patunamu ..	1,880	68	..	..	— 27	1,921	..	1,921
Rotoehu ..	4,903	255	86	69	— 1	5,174	..	5,174
Ruatoria ..	852	521	..	..	— 1	1,372	..	1,372
Tihoi ..	538	..	..	..	..	538	..	538
Whaka ..	3,876	281	..	94	— 4	4,059	..	4,059
Wharerata ..	1,480	128	..	..	..	1,608	..	1,608
Whirinaki ..	2,206	199	29	6	+ 3	2,431	..	2,431
Total ..	148,681	4,822	2,520	2,925	+ 42	153,140	4,067	157,207
Wellington—								
Awahohonu ..	..	202	..	..	..	202	..	202
Erua	1,690	..	..	..	..	1,690	7	1,697
Esk	2,921	442	..	..	..	3,363	..	3,363
Gwavas ..	4,044	229	66	79	— 4	4,256	68	4,324
Karioi ..	6,708	4	213	51	+ 16	6,890	108	6,998
Kaweka ..	2,901	579	..	..	— 4	3,476	..	3,476
Lismore ..	1,519	134	..	..	..	1,653	..	1,653
Mohaka ..	3,259	537	..	..	— 3	3,793	..	3,793
Motuiti ..	13	..	..	..	..	13	..	13
Mount Bruce ..	13	..	..	..	..	13	..	13
Ngaumu ..	5,694	217	..	17	— 147	5,747	17	5,764
Rangataua ..	362	..	..	..	..	362	..	362
Ruahines ..	117	22	..	..	— 4	135	..	135
Santoft ..	1,862	299	59	2	+ 2	2,220	127	2,347
Tangimoana ..	108	..	..	..	+ 7	115	..	115
Tararua ..	357	..	..	..	..	357	..	357
Te Wera ..	929	51	..	..	..	980	..	980
Tinui ..	23	..	..	..	..	23	..	23
Tongariro ..	1,044	..	..	..	+ 2	1,046	..	1,046
Waitarere ..	1,187	74	..	42	— 4	1,215	110	1,325
Waituhui ..	226	84	..	..	..	310	..	310
Rimutaka ..	41	47	..	..	..	88	..	88
Total ..	35,018	2,921	338	191	— 139	37,947	437	38,384

*Figures for year ended 31 March 1974 not available.

APPENDIX 3—continued

ESTABLISHMENT AND CLEAR FELLING IN STATE EXOTIC FORESTS

(c) *By Forests*—continued

South Island Conservancies

(Area in hectares)

Conservancy and Forest	Stocked Area at 31 March 1972	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1973*	Area Waiting Restocking	Total Productive Area
		New Area Planted	Former Productive Areas Restocked By Planting	Area Clear Felled with Yield				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nelson—								
Dumgree ..	40	..	..	13	+ 41	68	..	68
Golden Downs ..	21,380	1,414	311	474	+ 227	22,858	275	23,133
Hira	1,505	420	..	..	+ 34	1,959	..	1,959
Hukawai ..	145	..	..	..	..	145	..	145
Inangahua West	6	6	..	..	..	12	..	12
Motueka ..	1,940	132	..	..	+ 6	2,078	..	2,078
Rai-Whangamoa	2,596	171	..	..	— 6	2,761	..	2,761
Taiwhai ..	472	17	..	1	— 13	475	..	475
Wairau ..	710	557	..	..	— 10	1,257	..	1,257
Waitahu ..	35	40	..	..	..	75	..	75
Total ..	28,829	2,757	311	488	+ 279	31,688	275	31,963
Westland—								
Granville ..	281	..	..	..	..	281	22	303
Hochstetter ..	1,208	10	..	..	..	1,218	9	1,227
Hohonu ..	49	..	..	..	..	49	..	49
Ianthe ..	145	35	..	..	— 9	171	8	179
Kaniere ..	152	..	..	..	..	152	..	152
Mahinapua ..	841	..	..	..	..	841	8	849
Mawhera ..	1,023	360	..	..	+ 11	1,394	267	1,661
Nemona ..	808	198	..	..	..	1,006	..	1,006
Omoto ..	447	117	..	..	..	564	..	564
Paparoa ..	52	..	..	..	..	52	..	52
Waimea ..	1,033	74	..	..	— 2	1,105	..	1,105
Wanganui ..	25	..	..	..	..	25	..	25
Total ..	6,064	794	..	..	..	6,858	314	7,172
Canterbury—								
Ashley ..	4,221	446	13	39	— 203	4,438	193	4,631
Balmoral ..	7,734	2	75	169	— 40	7,602	386	7,988
Eyrewell ..	4,295	..	239	101	— 40	4,393	2,145	6,538
Geraldine ..	..	174	8	..	+1,598	1,780	1	1,781
Hanmer ..	3,668	..	42	52	+ 2	3,660	42	3,702
Island Hills ..	142	43	..	..	..	185	..	185
Kakahu† ..	1,233	..	..	..	—1,233	..	..	..
Mt. Thomas ..	190	91	..	..	+ 3	284	..	284
Omihi ..	1,087	..	68	..	— 65	1,090	103	1,193
Oxford ..	311	25	..	..	+ 2	338	..	338
Pioneer Park† ..	289	..	..	..	— 289	..	..	..
Raincliff† ..	76	..	..	..	— 76	..	..	..
Total ..	23,246	781	445	361	— 341	23,770	2,870	26,640
Southland—								
Beaumont ..	1,908	6	115	33	— 53	1,943	..	1,943
Berwick ..	4,926	47	87	11	— 124	4,925	..	4,925
Herbert ..	1,259	62	13	..	..	1,334	..	1,334
Hokonui ..	2,229	118	101	51	— 32	2,365	..	2,365
Longwood ..	1,343	15	..	9	+ 171	1,520	..	1,520
Naseby ..	1,365	41	13	13	— 5	1,401	..	1,401
Otago Coast ..	3,301	898	..	..	+ 4	4,203	..	4,203
Otautau ..	3	..	..	..	..	3	..	3
Owaka‡ ..	617	107	..	..	..	724	..	724
Rankleburn ..	2,545	117	..	..	— 12	2,650	..	2,650
Rowallan ..	680	47	..	..	— 3	724	..	724
Silver Peaks ..	333	89	5	..	..	427	..	427
Slopedown ..	1,054	206	..	..	..	1,260	..	1,260
Taringatura ..	142	267	..	..	..	409	..	409
West Tapanui§ ..	4,118	..	38	67	— 39	4,050	..	4,050
Woodlaw ..	1,767	256	174	..	— 179	2,018	..	2,018
Total ..	27,590	2,276	546	184	— 272	29,956	..	29,956

*Figures for year ended 31 March 1974 not available.
†Kakahu, Pioneer Park, and Raincliff have been absorbed by Geraldine.
‡The Owaka Forest is an amalgamation of Hinahina, Waikoata, Catlins, and Maclennan Forests.
§The West Tapanui Forest is an amalgamation of Conical Hill, Dusky, and Tapanui Forests.

APPENDIX 3—continued

ESTABLISHMENT AND CLEAR FELLING IN STATE EXOTIC FORESTS

(d) *By Species*

(Area in hectares)

Conservancy and Species	Stocked Area at 31 March 1972	Operations During Year			Other Changes in Stocked Area	Stocked Area at 31 March 1973*
		New Area Planted	Former Productive Areas Restocked by Planting	Area Clear Felled with Yield		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Auckland—						
Radiata pine ..	27,792	2,853	424	405	− 23	30,641
Douglas fir ..	1,588	152	..	..	− 86	1,654
Corsican pine ..	2,254	..	..	64	− 97	2,093
Other species ..	5,764	..	20	45	− 3	5,736
Total ..	37,398	3,005	444	514	− 209	40,124
Rotorua—						
Radiata pine ..	80,439	4,400	2,325	1,695	+ 661	86,130
Douglas fir ..	22,102	397	135	94	+ 8	22,548
Corsican pine ..	12,306	..	..	495	− 281	11,530
Other species ..	33,833	25	60	642	− 346	32,930
Total ..	148,680	4,822	2,520	2,926	+ 42	153,138
Wellington—						
Radiata pine ..	17,857	2,624	224	136	− 22	20,547
Douglas fir ..	5,645	45	..	..	− 98	5,592
Corsican pine ..	2,848	..	..	10	− 40	2,798
Other species ..	8,666	253	114	45	+ 21	9,009
Total ..	35,016	2,922	338	191	− 139	37,946
Nelson—						
Radiata pine ..	18,993	2,401	213	259	+ 207	21,555
Douglas fir ..	4,797	312	72	20	+ 2	5,163
Corsican pine ..	2,757	..	..	89	+ 13	2,681
Other species ..	2,282	44	26	121	+ 56	2,287
Total ..	28,829	2,757	311	489	+ 278	31,686
Westland—						
Radiata pine ..	3,961	757	..	..	− 6	4,712
Douglas fir ..	456	..	..	..	..	456
Corsican pine ..	120	..	..	..	..	120
Other species ..	1,528	37	..	..	+ 5	1,570
Total ..	6,065	794	..	..	− 1	6,858
Canterbury—						
Radiata pine ..	13,200	629	419	294	− 1	13,953
Douglas fir ..	2,254	142	6	..	− 54	2,348
Corsican pine ..	4,335	..	..	23	− 212	4,100
Other species ..	3,457	11	19	44	− 74	3,369
Total ..	23,246	782	444	361	− 341	23,770
Southland—						
Radiata pine ..	17,777	2,127	514	85	+ 21	20,354
Douglas fir ..	3,048	59	23	..	− 2	3,128
Corsican pine ..	3,902	19	5	69	− 281	3,576
Other species ..	2,860	70	5	29	− 9	2,879
Total ..	27,587	2,275	547	183	− 271	29,955
New Zealand—						
Radiata pine ..	180,019	15,791	4,119	2,874	837	197,892
Douglas fir ..	39,890	1,107	236	114	− 230	40,889
Corsican pine ..	28,522	19	5	750	− 898	26,898
Other species ..	58,390	440	244	926	− 350	57,798
Total ..	306,821	17,357	4,604	4,664	− 641	323,477

*Figures for year ended 31 March 1974 not available.

NOTES—(1) Non-productive afforestation for erosion control is excluded from this appendix.
(2) "Other changes" (column 6) includes purchase or sale of stocked forest, previous year's seeding or regeneration now considered established, clear felling without yield, losses due to fire, corrections due to resurvey, etc.

APPENDIX 4

Pruning and Thinning in State Exotic Forests for the Year Ended 31 March 1974*

(Area in hectares)

Conservancy and Species	Pruning					Thinned During Year	
	Area Pruned During Year			Total Pruned Area to Date			
	Total Area Pruned	To First Log	To Second Log	To First Log	To Second Log	With Yield	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Auckland—							
Radiata pine ..	1,259	427	..	5,260	733	459	789
Douglas fir ..	2	..	..	62	..	..	..
Corsican pine ..	..	..	..	..	..	..	..
Other species ..	24	24	..	1,021	123	10	5
Total ..	1,285	451	..	6,343	856	469	794
Rotorua—							
Radiata pine ..	4,866	800	..	14,552	515	2,175	3,370
Douglas fir ..	..	..	..	4,052	7	..	..
Corsican pine ..	..	..	..	2,138	53	..	..
Other species ..	..	..	..	2,700	9	..	..
Total ..	4,866	800	..	23,442	584	2,175	3,370
Wellington—							
Radiata pine ..	1,640	381	2	4,198	45	621	1,057
Douglas fir ..	58	..	..	289	..	..	16
Corsican pine ..	..	..	..	240	109	5	..
Other species ..	22	..	2	2,486	11	84	22
Total ..	1,720	381	4	7,213	165	710	1,095
Nelson—							
Radiata pine ..	1,030	334	..	2,425	159	4	1,021
Douglas fir ..	..	..	..	1,109	..	..	..
Corsican pine ..	..	..	..	1,692	..	..	..
Other species ..	..	..	..	167	..	..	..
Total ..	1,030	334	..	5,393	159	4	1,021
Westland—							
Radiata pine ..	323	160	..	514	52	..	264
Douglas fir ..	..	..	..	..	..	..	..
Corsican pine ..	..	..	..	..	..	..	..
Other species ..	..	..	..	..	..	..	..
Total ..	323	160	..	514	52	..	264
Canterbury—							
Radiata pine ..	550	207	..	1,797	..	336	1,048
Douglas fir ..	36	..	..	64	..	1	1
Corsican pine ..	..	..	..	1,012	2	..	97
Other species ..	..	14	..	241	..	..	3
Total ..	586	221	..	3,114	2	337	1,149
Southland—							
Radiata pine ..	1,233	263	..	3,354	36	102	917
Douglas fir ..	..	..	..	252	..	42	..
Corsican pine ..	..	..	..	725	5	34	..
Other species ..	..	..	..	808	17	2	..
Total ..	1,233	263	..	5,139	58	180	917
New Zealand—							
Radiata pine ..	10,901	2,572	2	32,100	1,540	3,697	8,466
Douglas fir ..	96	..	..	5,828	7	43	17
Corsican pine ..	..	..	..	5,807	169	39	97
Other species ..	46	38	2	7,423	160	96	30
Total ..	11,043	2,610	4	51,158	1,876	3,875	8,610

*Estimated figures.

Notes—(1) "Total Area Pruned" (column 2) includes pruning to intermediate steps, e.g., 0–9 ft, 18–27 ft.
(2) "To First Log" (columns 3 and 5) is pruning reaching 16–20 ft. "To Second Log" (columns 4 and 6) is pruning reaching 32 ft.
(3) Where pruning has gone from below first log up to second log in one operation the area has been included in columns (3) and (4).

APPENDIX 5

State Forest Parks 1973–74

Forest Park	Conservancy	Area (hectares)	Gazetted* or Approved
Tararua	Wellington ..	110,652	Gazetted 14 Sep 1967
Craigieburn ..	Canterbury ..	4,451	Gazetted 26 Oct 1967
Kaimanawa ..	Wellington ..	76,042	Gazetted 2 Oct 1969
North-west Nelson ..	Nelson	357,865	Gazetted 10 Sep 1970
Coromandel.. ..	Auckland ..	66,459	Gazetted 5 May 1971
Pirongia	Auckland ..	12,891	Gazetted 20 May 1971
Rimutaka	Wellington ..	14,050	Gazetted 10 Aug 1972
Kaweka	Wellington ..	60,827	Gazetted 31 Jan 1974
Lake Sumner ..	Canterbury ..	73,500†	Awaiting gazettal
Catlins	Southland ..	40,500†	Approved in principle
Kaimai-Mamaku ..	Rotorua	20,800†	Approved in principle
Haurangi	Wellington ..	13,800†	Approved in principle
Ruahine	Wellington ..	93,400†	Approved in principle

*Total area of gazetted forest parks at 31 March 1974 is 703,237 hectares.
†Approximate.

APPENDIX 6

Total Timber Removals from State Forests for the Year Ended 31 March 1974*

(Volume in thousand cubic metres)

Conservancy	Indigenous			Exotic			Grand Total
	Logs	Smallwood	Total	Logs	Smallwood	Total	
Auckland ..	70	..	70	338	32	370	440
Rotorua ..	159	..	159	2,056	38	2,094	2,253
Wellington ..	37	..	37	105	23	128	165
Nelson ..	54	41	95	148	77	225	320
Westland ..	174	1	175	1	..	1	176
Canterbury ..	..	..	..	86	33	119	119
Southland ..	35	..	35	159	18	177	212
Total—1973–74*	529	42	571	2,893	221	3,114	3,685
1972–73†	531	3	534	2,862	104	2,966	3,500
1971–72†	522	3	525	2,859	89	2,948	3,473

*Estimated figures only.
†Actual.

Notes—(1) This table shows all roundwood removed from State forests under licences, permits, and log sale agreements.
(2) Roundwood for particle board production is included with logs.

APPENDIX 7

Total Smallwood Removals from State Forests

(Volume in thousand cubic metres)

Category	Year Ended 31 March 1970	1971	1972	1973*
(1)	(2)	(3)	(4)	(5)
Posts—				
Indigenous	595	963	850	651
Exotic	78,154	100,440	70,197	87,500
Total	78,749	101,403	71,047	88,151
Other Fencing Material—				
Indigenous	793	878	425	566
Exotic	5,663	7,759	4,616	4,163
Total	6,456	8,637	5,041	4,729
Poles—				
Indigenous	..	57	57	..
Exotic	14,668	13,082	9,401	9,684
Total	14,668	13,139	9,458	9,684
Other—				
Indigenous	2,577	2,010	2,067	2,322
Exotic	3,058	4,899	4,587	2,747
Total	5,635	6,909	6,654	5,069
Total Smallwood—				
Indigenous	3,965	3,908	3,399	3,539
Exotic	101,543	126,180	88,801	104,094
Total	105,508	130,088	92,200	107,633

*Figures for year ended 31 March 1974 not available.

Note—Chipwood for particle board production is excluded from this table and is included with "Logs" in appendix 6.

ERRATUM, APPENDIX 7

Volume in cubic metres, *not* thousand cubic metres.

APPENDIX 8

Total Timber Removals from State Indigenous Forests by Method of Sale for the Year Ended 31 March 1973*

(Volume in cubic metres; value in $(000))

Conservancy	Logs		Smallwood		Total	
	Volume	Value	Volume	Value	Volume	Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(a) *Sales of Standing Timber*						
Auckland	47,997	294	198	1	48,195	295
Rotorua	102,365	306	340	1	102,705	307
Wellington	43,495	288	283	1	43,778	289
Nelson	59,918	120	934	1	60,852	121
Westland	148,097	290	1,218	2	149,315	292
Canterbury	..	..	..	..	..	..
Southland	22,087	70	28	..	22,115	70
Total—1972–73	423,959	1,368	3,001	6	42,690	1,374
1971–72	418,296	1,201	3,256	8	421,552	1,209
1970–71	435,909	1,315	3,908	7	439,817	1,322
(b) *Sales of Logs*						
Auckland	25,825	332	..	..	25,825	332
Rotorua	52,669	683	..	..	52,669	683
Wellington	..	..	..	..	..	..
Nelson	2,718	14	538	2	3,256	16
Westland	25,627	280	..	..	25,627	280
Canterbury	..	..	..	..	..	..
Southland	..	..	..	..	..	..
Total—1972–73	106,839	1,309	538	2	107,377	1,311
1971–72	103,413	1,129	142	1	103,555	1,130
1970–71	99,279	1,017	..	..	99,279	1,017

*Figures for year ended 31 March 1974 not available.

Notes—(1) Logs include saw logs and peeler logs.
(2) Values of log sales relate to the value of timber removed and are based on a bush skid or ride price point.

APPENDIX 9

Total Timber Removals from State Exotic Forests by Method of Sale for the Year Ended 31 March 1973*

(Volume in cubic metres; value in $(000))

Conservancy	Logs		Smallwood		Total	
	Volume	Value	Volume	Value	Volume	Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(a) *Sales of Standing Timber*						
Auckland ..	168,287	541	23,078	36	191,365	577
Rotorua	1,036,312	1,333	27,099	46	1,063,411	1,379
Wellington ..	65,384	192	17,132	35	82,516	227
Nelson	47,572	31	198	1	47,770	32
Westland	821	1	..	..	821	1
Canterbury ..	120,375	467	8,240	17	128,615	484
Southland ..	34,150	104	11,270	30	45,420	134
Total—1972–73 ..	1,472,901	2,669	87,017	165	1,559,918	2,834
1971–72 ..	1,398,654	2,268	604,791	126	1,465,425	2,394
1970–71 ..	1,445,292	2,188	81,411	149	1,526,703	2,337
(b) *Sales of Logs*						
Auckland ..	72,718	570	1,671	14	74,389	584
Rotorua	976,223	8,047	10,336	79	986,559	8,126
Wellington ..	27,666	157	85	1	27,751	158
Nelson	191,790	1,337	142	1	191,932	1,338
Westland	..	..	..	..	..	..
Canterbury ..	7,730	39	1,671	7	9,401	46
Southland ..	113,239	876	3,171	21	116,410	897
Total—1972–73 ..	1,389,366	11,026	17,076	123	1,406,442	11,149
1971–72 ..	1,461,489	8,872	22,031	160	1,483,520	9,032
1970–71 ..	1,436,032	8,229	44,769	283	1,480,801	8,512

*Figures for year ended 31 March 1974 not available.

Notes—(1) Logs include saw logs, pulp logs, and peeler logs.
(2) This appendix has been adjusted to exclude any log exports by contractors from sales of standing timber and to include them in the sales of logs. Tables (a) and (b) have been corrected for the years shown.
(3) Values of log sales relate to the value of timber removed and are based on a bush skid or ride price point.

APPENDIX 10

Removals of Exotic Roundwood from State Forests by Thinnings and Clear Fellings

(Volume in cubic metres)

Forest	Year Ended 31 March 1973*					1971–72
	Logs		Smallwood		Total	
	Thinnings	Clear Fellings	Thinnings	Clear Fellings		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Athenree	..	9,430	..	28	9,458	6,938
Aupouri	..	566	1,671	113	2,350	2,095
Glenbervie	680	..	2,775	..	3,455	4,219
Kauaeranga	..	..	..	..	..	255
Mangawhai	..	..	..	..	..	..
Maramarua	..	65,893	198	2,747	68,838	66,856
Omahuta	..	..	..	..	..	198
Puhipuhi	..	8,184	..	453	8,637	9,033
Riverhead	..	78,154	..	..	78,154	82,912
Tairua	1,388	5,890	..	..	7,278	651
Waipoua	..	6,966	..	3,370	10,336	6,343
Waitangi	2,010	1,416	2,945	..	6,371	3,993
Waiuku	6,938	6,315	5,975	..	19,228	17,726
Whangapoua	..	..	396	..	396	..
Woodhill	46,581	510	3,738	..	50,829	36,755
Others†	..	57	..	283	340	538
Kaingaroa	342,237	1,560,400	2,662	31,856	1,937,155	1,824,568
Mangatu	..	..	..	..	..	..
Minginui	1,954	..	..	..	1,954	..
Patunamu	736	566	255	28	1,585	1,671
Rotoehu	..	30,780	..	..	30,780	30,044
Ruatoria	..	..	..	..	..	..
Waimihia	23,503	..	..	255	23,758	..
Whaka	17,188	35,198	28	2,322	54,736	50,093
Whirinaki	..	..	..	..	..	..
Esk	..	..	..	..	..	340
Gwavas	6,938	16,877	878	170	24,863	19,227
Karioi	1,897	23,163	2,464	4,870	32,394	30,384
Kaweka	..	4,276	..	..	4,276	..
Lismore	..	3,256	..	..	3,256	85
Motuiti	..	..	..	..	..	453
Ngaumu	11,950	..	4,842	113	16,905	6,881
Santoft	..	651	1,472	..	2,123	7,759
Tangimoana	..	736	..	..	736	227
Te Wera	..	..	..	..	..	113
Tongariro	..	..	..	28	28	..
Waitarere	12,856	10,392	1,019	1,359	25,626	11,129
North Island	476,856	1,869,676	31,318	47,995	2,425,845	2,221,486
Dumgree	..	595	..	28	623	1,954
Golden Downs	7,646	230,811	142	..	238,599	448,709
Rai-Whangamoa	..	57	..	28	85	170
Others†	..	227	..	170	397	85
Mahinapua	..	821	..	..	821	1,246
Ashley	113	9,005	283	1,076	10,477	5,692
Balmoral	..	51,310	2,152	821	54,283	35,708
Eyrewell	..	38,936	..	736	39,672	49,413
Hanmer	2,209	25,429	1,048	3,823	32,509	33,131
Raincliff	..	..	..	..	..	3,285
Others†	..	1,104	..	..	1,104	765
Beaumont	..	43,439	..	..	43,438	64,308
Berwick	4,304	1,416	1,303	142	7,165	..
Conical Hill	..	..	..	..	..	29,251
Dusky	..	..	..	..	..	3,653
Herbert	1,104	..	28	1,784	2,916	1,161
Hokonui	3,030	13,932	3,256	113	20,331	25,627
Longwood	..	..	311	453	764	1,076
Naseby	680	4,417	1,472	227	6,796	6,343
Tapanui	8,014	66,743	142	3,794	78,693	13,932
Others†	..	..	1,841	..	1,841	1,954
South Island	27,100	488,241	11,978	13,195	540,514	727,463
New Zealand	503,956	2,357,917	43,296	61,190	2,966,359	2,948,949

*Figures for year ended 31 March 1974 not available.
†Includes forests producing less than 280 m³.

APPENDIX 11

New Zealand Forest Service Sawmilling Operations

(a) *Production of Sawn Timber**

(Volume in cubic metres)

Sawmill	Year Ended 31 December				
	1969	1970	1971	1972	1973
(1)	(2)	(3)	(4)	(5)	(6)
Waipa	106,967	106,078	104,316	110,611	141,807
Conical Hill	20,847	24,236	26,392	24,318	28,691
Total production ..	127,814	130,314	130,708	134,929	170,498

*Includes sleepers.

(b) *Sales of Sawn Timber*

(Volume in cubic metres)

Details	Year Ended 31 December				
	1969	1970	1971	1972	1973
(1)	(2)	(3)	(4)	(5)	(6)
New Zealand sales—					
Green	25,401	28,884	31,396	39,524	41,396
Air seasoned	5,335	8,318	7,193	10,849	9,573
Kiln dried	4,606	4,606	5,481	3,370	2,863
Treated—					
Wet	28,429	27,729	27,950	30,910	45,259
Dry	2,281	3,035	3,835	5,686	6,500
Total	66,052	72,572	75,855	90,339	105,591
Export sales—					
Green	41,342	37,651	37,547	42,307	43,842
Air seasoned	342	8,323	4,960	290	182
Kiln dried	3,019	2,262	1,722	1,189	2,101
Treated	2,215	5,962	3,627	1,578	4,106
Total ..	46,918	54,198	47,856	45,364	50,231
Transfers to box factory ..	3,139	2,236	3,573	2,854	3,705
Grand total ..	116,109	129,006	127,284	138,557	159,527

(c) *Subsidiary Processing of Sawn Timber*

Year Ended 31 December 1973

	Cubic Metres
Quantity kiln dried	19,929
Quantity dressed	72,783
Quantity preservative treated* ..	72,108

*For further details see appendix 12.

APPENDIX 12

Forest Produce Treated

(a) *Sawn Timber Treated by the New Zealand Forest Service*
(Volume in cubic metres)

Location of Plant and/or Year	Preservative				Total
	Boron	Creosote	Boliden	PCP*/ Fuel Oil	
(1)	(2)	(3)	(4)	(5)	(6)
Waipa	44,743	..	12,549	375	57,667
Conical Hill	14,441	..	..	..	14,441
Total, year ended 31 December—					
1973	59,184	..	12,549	375	72,108
1972	31,061	..	10,321	222	41,604
1971	23,163	..	8,665	193	32,021
1970	29,075	..	9,163	144	38,382
1969	28,778	..	9,373	137	38,288

*Pentachlorophenol.

(b) *Other Timber Treated by the New Zealand Forest Service*

Type and Year	Hanmer	Waipa		Total	
	PCP*/ Fuel Oil	Boliden	PCP*/ Fuel Oil	Quantity	Volume
(1)	(2)	(3)	(4)	(5)	(6)
	(Quantities in thousands)				
Poles	1.1	4.0	8.0	13.1	3,582
Stockyard posts	2.2	..	0.5	2.7	244
Fencing posts	20.1	166.3	53.7	240.1	5,032
Strainers	41.5	17.3	1.4	60.2	1,697
Stays	1.7	1.3	2.5	5.5	153
Sawn battens	..	80.3	..	80.3	218
Sleepers†	..	..	90.8	90.8	6,007
Other	..	4.2	10.0	14.2	821
	(Volume in cubic metres)				
Total, year ended 31 December—					
1973	1,472	6,201	10,081	N.A.	17,754
1972	2,095	5,720	15,263	N.A.	23,078
1971	2,633	8,608	12,459	N.A.	23,700
1970	3,341	7,985	11,355	N.A.	22,681
1969	3,455	6,853	11,695	N.A.	22,003

*Pentachlorophenol. †Excluding rejects.

(c) *Total Forest Produce Treated in New Zealand (Forest Service and Private)*

——	Number of Plants	Treated Timber m^3	Percentage of Total Sawn Timber	Other Treated Timber—Poles Sleepers, etc Million Cu Ft
1962–63	195	500,320	82,880	2.96
1963–64	199	540,204	123,200	4.40
1964–65	213	650,180	187,600	6.70
1965–66	242	716,260	246,400	8.80
1966–67	260	715,316	240,240	8.58
1967–68	271	624,928	225,400	8.05
1968–69	295	657,024	267,680	9.56
1969–70	290	712,484	238,280	8.51
1970–71	271	716,968	281,120	10.04
1971–72	270	662,924	270,200	9.65
1972–73	265	768,652	243,320	8.69

Source: Department of Statistics.

APPENDIX 13

Employment and Training

(a) *Staff and Labour*

Category (1)	Strength, 31 March 1973 (2)	Commenced During Year (3)	Left During Year (4)	Strength, 31 March 1974 (5)
Staff	2,710*	449	428	2,731
Labour—				
Thinning, logging, milling ..	865	1,072	1,057	880
Other forestry operations ..	1,711	3,826	3,777	1,770
Control of noxious animals ..	118	328	273	173
Cadet woodsmen	60	97	..	97
Total	2,754	5,333	5,107	2,920
Total staff and labour	5,464	5,782	5,535	5,651

*Includes 58 on leave without pay and 2 on secondment. These have not been included in the estimates of expenditure.

(b) *Training*

Category (1)	Year Ended 31 March 1972 (2)	1973 (3)	1974 (4)
Forester trainees—			
Recruited during year	14	15	25
Studying for degrees in New Zealand ..	48	43	53
Ranger trainees—			
Recruited during year	26	21	22
Under field training	63	74	92
At ranger schools	31	22	25
Research technicians—			
Recruited during year	13	8	8
Under training	36	30	28
Woodsmen—			
Recruited during year	115	60	98
At woodsmen schools	177	124	140
Clerical cadets—			
Recruited	37	29	25

REPORT OF THE AUDIT OFFICE

To the Director-General of Forests.

The Audit Office, acting under statutory authority, has audited the accounts of the Commercial Division, New Zealand Forest Service, for the year ended 31 December 1973.

The audit included such reviews of the accounting procedures and tests of the accounting records and other supporting evidence as were considered necessary in terms of section 20, Public Revenues Act 1953. All the information and explanations required have been obtained. The financial transactions which have come under notice have been within statutory authority.

In the opinion of the Audit Office the attached balance sheet, accompanying accounts, notes numbered 1 to 9, and statement of source and application of funds give a true and fair view of the state of affairs of the Commercial Division as at 31 December 1973 and of the results of the financial operations for the year.

K. Gillies, Controller and Auditor-General.

18 April 1974.

APPENDIX 14

New Zealand Forest Service Commercial Division
Accounts for the Year Ended 31 December 1973

A. Operating Account

Year Ended 31 December 1972			Year Ended 31 December 1973	
$	*$*		$	$
	9,168,714	Gross value of production		11,848,702
		Less—		
3,326,092		Cost of logs (note 1)	3,892,792	
3,717,239		Manufacturing expenses (note 2)	4,335,589	
1,146,442		Selling and distribution expenses (note 3)	1,239,052	
493,053		Administration and financial expenses (note 4)	891,359	
	8,682,826			10,358,792
	485,888	Operating profit		1,489,910
	11,534	Less net expenditure on employee accommodation (note 5)		30,584
	$474,354	Profit for year		$1,459,326

B. Profit and Loss Appropriation Account

Year Ended 31 December 1972			Year Ended 31 December 1973	
$	*$*		$	$
	474,354	Net profit from operating account		1,459,326
	4,644	Plus profit on sale and disposal of assets		4,829
	478,998			1,464,155
	29,233	Less payroll tax		20,024
	449,765	Tax paid profit		1,444,131
50,180		Less appropriation to fire insurance reserve	150,000	
208,627		Proposed dividend	244,917	
	258,807			394,917
	190,958	Retained profits		1,049,214
	2,794,539	Plus balance 1 January		2,962,224
	2,985,497			4,011,438
	23,273	Less adjustments relating to previous year (note 6)		6,711
	$2,962,224	Accumulated profits		4,004,727

C. Balance Sheet

Year Ended 31 December 1972			Year Ended 31 December 1973	
$	$		$	$
		Funds employed—		
	4,486,942	Advances of Government funds		2,716,486
	2,962,224	Accumulated profits		4,004,727
		Represented by the following notional capital apportionment: ..		
1,190,328		Bank overdraft	843,202	
2,086,280		Term finance	1,959,337	
2,086,279		Accumulated profits and reserves	1,959,337	
2,086,279		Share capital	1,959,337	
7,449,166			6,721,213	
	7,449,166			6,721,213
	281,613	Reserve for fire losses		431,613
	7,730,779			$7,152,826
		Current assets—		
2,344,007		Sundry debtors, including prepayment (note 7) ..	1,782,734	
2,261,089		Stocks and stores (note 8)	2,070,439	
	4,605,096			3,853,173
		Fixed assets, at cost less depreciation (note 9)—		
2,450,777		Plant, equipment, and tools	2,667,894	
682,528		Buildings	843,406	
369,048		Houses and employee accommodation	368,041	
5,433		Furniture and fittings	6,157	
513,847		Other installations	530,290	
	4,021,633			4,415,788
	8,626,729			8,268,961
		Less—		
687,323		Current liabilities	871,218	
208,627		Proposed dividend	244,917	
	895,950			1,116,135
	$7,730,779			$7,152,826

The notes which follow form part of and are to be read in conjunction with these accounts.

M. J. Conway, Director-General.

A. A. B. Webby, Director, Commercial Division.

D. Notes on the Accounts

1. *Cost of Logs*

Expenses of logs to mill and other roundwood extracted under contract to delivery point, after adjusting for opening and closing stocks. Includes an average stumpage for all supplies, both clear fellings and thinnings, as follows:

	1972	1973
Waipa ..	5.5 cents per cu ft ($1.94 per m^3)	8.0 cents per cu ft ($2.84 per m^3)
Conical Hill ..	3.75 cents per cu. ft ($1.32 per m^3)	5.24 cents per cu. ft ($1.85 per m^3)

2. *Manufacturing Expenses*

Expenses of manufacturing and processing into finished products in mill yard.

3. *Selling and Distribution Expenses*

Direct wages and salaries of sales staff and yard staff involved in preparing finished products for sale, together with all expenses from mill gate to point of sale.

4. *Administration and Financial Expenses*

Includes:

	1972	1973
Interest paid ..	$130,516	$204,094
Audit fee	$1,701	$1,918

5. *Net Expenditure on Employee Accommodation*

Excess of direct outgoings over actual rents determined by agreement between the State Services Commission and the Combined State Services Organisation and the New Zealand Timber Workers Union.

6. *Adjustments*

The deduction from accumulated profits as at 1 January 1973 is made up as follows:

(a) Items relating to previous year's operations—		
Sundry creditors understated		$34,740
(b) *Less* under recovery—		
Export log sales	$12,567	
Compensation adjustment ..	$15,462	
		$28,029
		$6,711

7. *Sundry Debtors*

Is the net amount after deducting the following:

	1972	1973
Provision for doubtful debts	$53,000	$123,000
Provision for discounts ..	$8,822	$10,933

8. *Stocks and Stores*

This item comprises:

	1972	1973
Logs and timber stocks ..	$1,839,031	$1,608,209
General stores	$422,058	$462,230

9. *Fixed Assets*

	Original Cost at 31 Dec 1973	Cumulative Depreciation	Additions 1973	Deletions 1973
	$	$	$	$
Plant, equipment, and tools ..	6,232,609	3,564,715	676,447	230,024
Buildings	1,455,829	612,423	198,641	..
Houses and employee accommodation	717,975	349,934	9,957	..
Furniture and fittings ..	20,781	14,624	1,721	..
Other installations	843,846	313,556	26,080	392
	9,271,040	4,855,252	912,846	230,416

Depreciation provided in 1973 was $487,075; in 1972, $417,149.

E. Source and Application of Funds

	1972 $	1973 $
Net funds from operations—		
Tax paid profit	449,585	1,444,131
Depreciation	417,149	487,075
Increase in advances from Government	1,509,114	..
Proceeds from the sale of fixed assets	24,695	24,905
Decrease in current assets	..	751,923
Increase in current liabilities	..	183,895
Total funds available	2,400,543	2,891,929
These funds were applied in—		
Acquisition of fixed assets	923,589	912,846
Increase in current assets	219,995	..
Decrease in current liabilities	1,256,959	..
Decrease in advances from Government	..	1,770,456
Payment of dividend	..	208,627
	2,400,543	2,891,929

F. Highlights

	1972	1973
Gross value of production ($000)	9,169	11,849
Production (000 bd ft)	57,210	72,291
Total personnel employed	811	847
Total remuneration to employees ($000)	3,337	4,318
Tax paid profit $	449,765	1,444,131
Proposed dividend $	208,627	244,917
Retained profits $	190,958	1,049,214
Percentage of profits retained	48	72
Total assets ($000)	8,627	8,269
Working capital ($000)	2,519	1,894
Total funds employed $(000)	7,731	7,153

G. Statistics

	1972	1973
Dividend rate (percent)	10	12.5
No. of times covered by profit	2.2	5.9
Tax Paid Profit to:		
(a) Shareholders funds (percent)	10.8	36.8
(b) Gross sales (percent)	4.9	12.2
(c) Share capital (percent)	21.5	73.7
(d) Total funds employed (percent)	5.8	17.5
Current assets to:		
(a) Current liabilities	2.2:1	2.0:1
(b) Stocks	2.0:1	1.9:1

REPORT OF THE AUDIT OFFICE

To the Director-General of Forests.

The Audit Office, acting under statutory authority, has audited the accounts of the New Zealand Forest Service for the year ended 31 December 1973.

The audit included such reviews of the accounting procedures and tests of the accounting records and other supporting evidence as were considered necessary in terms of section 20, Public Revenues Act 1953. All the information and explanations required have been obtained. The financial transactions which have come under notice have been within statutory authority.

In the opinion of the Audit Office the attached balance sheet and accompanying accounts give a true and fair view of the state of affairs of the Forest Service as at 31 December 1973 and of the results of the financial operations for the year.

K. GILLIES, Controller and Auditor-General.

18 April 1974.

APPENDIX 15

New Zealand Forest Service Accounts for the Year Ended 31 December 1973

(a) General Administration Account

Year Ended 31 December 1972			Year Ended 31 December 1973	
$	*$*		$	
		Charges incurred directly in respect of—		
68,840		Fire prevention and precaution and administration of fire districts	79,867	
2,919,260		Technical investigations, research, etc.	3,425,393	
255,757		Assistance to public and private forestry	357,386	
164,408		Timber inspection and termite control	167,233	
605,896		Control of noxious animals	668,822	
898,422		Work for other departments	1,059,859	
372,382		Staff training, including Rotorua training centre	325,650	
236,086		Payments to local authorities for roading purposes (fifths)	229,464	
5,521,051			6,313,674	
847,250		*Less* fees for inspection, recoveries from other departments, etc.	1,062,816	
	4,673,801			5,250,858
		General administration expenses—		
3,393,069		Staff expenses, including salaries, overtime, travelling, and general expenses	4,968,347	
705,057		Office expenses, including postages, stationery, and general expenses	880,534	
506,755		Maintenance and depreciation of administrative buildings, equipment, etc.	566,806	
139,530		Miscellaneous general expenses	296,594	
4,744,411			6,712,281	
2,662,506		*Less* amounts charged against forests and other activities as "overhead"	2,839,885	
7,603		*Less* amounts charged against mills as "overhead"	13,669	
	2,074,302			3,858,727
	6,748,103			9,109,585
	41,870	*Less* miscellaneous revenue		75,728
	$6,706,233	Net deficit in Administration Account transferred to Consolidated Revenue Account in balance sheet		$9,033,857

(b) Forest Development and Management Accounts (excluding Waipa and Conical Hill Sawmills)

Year Ended 31 December 1972			Year Ended 31 December 1973	
$	*$*		$	$
4,785,510		Establishment	5,331,103	
1,920,870		Tending	1,700,324	
829,562		Protection	892,635	
6,745,889		Maintenance of assets and miscellaneous expenses	6,553,819	
842,645		Depreciation of assets	741,027	
2,662,505		Overhead charged to forests and credited to General Administration Account	2,839,885	
8,210,039		Cost of utilisation	11,781,435	
	25,997,020			29,840,228
		Less—		
16,172,770		Sale of logs	23,186,834	
2,910,650		Sales of standing timber	3,955,003	
208,121		Miscellaneous revenue	377,118	
	19,291,541			27,518,955
	$6,705,479	Net costs transferred to "development and management" in the balance sheet		$2,321,273

APPENDIX 15—continued

New Zealand Forest Service Accounts for the Year Ended 31 December 1973—*continued*

(c) Consolidated Balance Sheet

Year Ended 31 December 1972			Year Ended 31 December 1973	
$	$		$	$
	9,969,189	Fixed assets (at cost)— Land taken over or purchased		10,775,827
16,630,056		Buildings, including houses and camps	17,664,397	
19,313,554		Roads, bridges, tracks, etc.	21,941,927	
14,735,812		Plant and vehicles	16,032,962	
5,283,009		Other assets	5,929,935	
55,962,431			61,569,221	
14,565,600		*Less* provision for depreciation	15,624,698	
	41,396,831			45,944,523
		Development and management (net costs)—		
53,901,087		Balance as at 1 January 1972	60,606,566	
6,705,479		*Plus* net costs for the year	2,321,273	
	60,606,566			62,927,839
	1,085,371	Forestry Encouragement Loans*		1,295,191
		Current assets—		
5,000,548		Sundry debtors	6,744,515	
53,000		*Less* provision for bad debts (departmental mills)	123,000	
	4,947,548			6,621,515
	2,950,959	Stocks and stores (at cost)		2,650,460
		Intangible assets—		
	32,755,044	Interest capitalised but not charged against specific assets		36,183,323
	153,711,508	Total assets		166,398,678
		Capital—		
55,963,960		National Development Loans	69,036,200	
13,072,239		*Plus* net payments for year	11,636,548	
	69,036,199			80,672,748
45,346,158		Consolidated Revenue Account	43,275,011	
4,635,085		*Plus* net payments for year	5,719,642	
49,981,243			48,994,653	
6,706,233		*Less* net deficit in General Administration Account	9,033,857	
43,275,010			39,960,796	
35,652,258		*Plus* accumulated interest on National Development Loans	39,023,598	
	78,927,268			78,984,394
		Accumulated profits and reserves—		
2,962,224		Profits of Waipa and Conical Hill sawmills	4,004,727	
380,320		Fire and other reserves	533,315	
	3,342,544			4,538,042
		Current liabilities—		
125,597		Cash held on deposits	156,428	
125,597		*Less* cash held against same	156,428	
	2,405,497	Sundry creditors		2,203,494
	$153,711,508			$166,398,678

*Approximately only half repayable in terms of Forestry Encouragement Loans Regulations 1967.

M. J. Conway, Director-General.

D. L. Hard, Chief Accountant.

APPENDIX 16

Production of Rough Sawn Timber for the Year Ended 31 March 1973

(a) *By Species*

(Volume in cubic metres)

Region	Indigenous								Exotic				All Species			Sawmills Registered 31 March 1973*
	Rimu and Miro	Matai	Totara	Kahikatea	Kauri	Tawa	Beech	Minor Species	Exotic Pines	Douglas Fir	Eucalypts	Minor Species	Indigenous	Exotic	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Conservancy—																
Auckland ..	37,274	4,042	1,918	3,016	3,020	2,178	588	514	141,174	649	1,536	2,506	52,550	145,865	198,415	105
Rotorua ..	60,114	5,140	1,992	3,870	..	12,384	31	323	713,304	132,166	1,562	302	83,854	847,334	931,188	47
Wellington ..	42,980	8,382	5,099	5,156	12	170	19	99	122,758	8,552	78	3,629	61,917	135,017	196,934	85
Nelson	24,482	40	9	1,284	..	68	3,193	7	73,093	8,273	31	238	29,083	81,635	110,718	59
Westland ..	102,160	399	163	14,446	..	..	2,228	61	422	..	..	..	119,457	422	119,879	26
Canterbury ..	24	101	..	2	..	..	..	..	114,292	1,314	531	1,626	127	117,763	117,890	55
Southland ..	13,984	182	85	628	..	..	18,397	111	69,272	6,303	87	1,258	33,387	76,920	110,307	45
North Island—																
1972–73 ..	140,368	17,564	9,009	12,042	3,032	14,732	638	936	977,236	141,367	3,176	6,437	198,321	1,128,216	1,326,537	237
1971–72 ..	152,338	16,823	9,871	13,750	3,830	22,911	314	1,749	927,289	130,829	1,890	18,576	221,586	1,078,584	1,300,170	239
1970–71 ..	170,168	25,974	11,565	14,737	3,903	17,174	205	1,527	1,015,069	110,816	2,822	11,853	245,253	1,140,560	1,385,813	255
South Island—																
1972–73 ..	140,650	722	257	16,360	..	68	23,818	179	257,079	15,890	649	3,122	182,054	276,740	458,794	185
1971–72 ..	150,778	859	297	17,016	14	24	22,618	219	240,162	13,399	647	1,126	191,825	255,334	447,159	197
1970–71 ..	155,190	838	269	15,303	..	5	26,429	146	249,658	13,264	654	3,091	198,180	266,667	464,847	202
New Zealand—																
1972–73 ..	281,018	18,286	9,266	28,402	3,032	14,800	24,456	1,115	1,234,315	157,257	3,825	9,559	380,375	1,404,956	1,785,331	422
1971–72 ..	303,116	17,682	10,168	30,766	3,844	22,935	22,932	1,968	1,167,451	144,228	2,537	19,702	413,411	1,333,918	1,747,329	436
1970–71 ..	325,358	26,812	11,834	30,040	3,903	17,179	26,634	1,673	1,264,727	124,080	3,476	14,944	443,433	1,407,227	1,850,660	457

*Figures for year ended 31 March 1974 not available.

Note—(1) This table is based on statistics collected by the New Zealand Forest Service in connection with the annual registration of sawmills.
(2) Indigenous Minor Species (column 9) for 1972–73 include—taraire, 377 m^3; tanekaha, 146 m^3; hinau, 113 m^3; rewarewa, 146 m^3; puriri, 47 m^3; other and unspecified, 286 m^3.
(3) Exotic Minor Species (column 13) for 1972–73 include—larch, 3,250 m^3, macrocarpa, 4,507 m^3; poplar, 274 m^3; redwood, 160 m^3; other and unspecified, 1,368 m^3.
(4) This table includes the production of sawn sleepers; 9,699 m^3 was produced in 1972–73.

APPENDIX 16—continued

(b) *By Land Ownership*

(Volume in cubic metres)

Region	Indigenous					Exotic				Grand Total
	State Forest Land	Unoccupied Crown Land	Maori Land	Private Land and Crown Leasehold	Total	State Forest Land	Local Authority Land	Company and Private Land	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Conservancy—										
Auckland	39,769	..	4,514	8,269	52,552	87,480	899	57,486	145,865	198,417
Rotorua	40,392	..	19,543	23,918	83,853	398,918	359	448,057	847,334	931,187
Wellington	22,594	..	12,868	26,455	61,917	32,036	14,897	88,084	135,017	196,934
Nelson	19,687	602	..	8,795	29,084	39,132	1,376	41,128	81,636	110,720
Westland	85,958	5,081	123	28,296	119,458	422	..	..	422	119,880
Canterbury	54	..	..	73	127	55,612	27,946	34,204	117,762	117,889
Southland	12,509	..	18,366	2,511	33,386	50,583	5,824	20,513	76,920	110,306
North Island—										
1972–73	102,755	..	36,925	58,642	198,322	518,434	16,155	593,627	1,128,216	1,326,538
1971–72	95,312	9,706	38,955	77,612	221,585	467,497	7,393	603,694	1,078,584	1,300,169
1970–71	96,900	14	68,237	80,101	245,252	468,814	12,065	659,681	1,140,560	1,385,812
South Island—										
1972–73	118,208	5,683	18,489	39,675	182,055	145,749	35,146	95,845	276,740	458,795
1971–72	126,402	420	27,038	37,966	191,826	146,134	30,736	78,464	255,334	447,160
1970–71	128,766	1,744	22,561	45,109	198,180	130,786	47,754	88,127	266,667	464,847
New Zealand—										
1972–73	220,963	5,683	55,414	98,317	380,377	664,183	51,301	689,472	1,404,956	1,785,333
1971–72	221,714	10,126	65,993	115,578	413,411	613,631	38,129	682,158	1,333,918	1,747,329
1970–71	225,666	1,758	90,798	125,210	443,432	599,600	59,819	747,808	1,407,227	1,850,659

APPENDIX 17

Production of Pulp and Paper in New Zealand

(Quantity in tonnes)

Year Ended 31 March	Wood Pulp			Fibreboard	Paper and Paperboard		
	Mechanical	Chemical*	Total		Newsprint	Other Paper and Paperboard	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1965 ..	206,636	196,127	402,763	32,245	187,275	128,844	316,119
1966 ..	221,238	196,282	417,520	34,313	198,745	156,012	354,757
1967 ..	208,641	227,453	436,094	33,406	186,837	173,170	360,007
1968 ..	224,709	256,494	481,203	33,606	198,685	178,755	377,440
1969 ..	234,682	259,093	493,775	38,903	202,732	193,043	395,775
1970 ..	244,980	316,888	561,868	40,188	207,413	238,585	445,998
1971 ..	258,948	317,074	576,022	44,354	213,917	247,965	461,882
1972 ..	262,627	317,998	580,625	45,526	218,021	250,766	468,787
1973† ..	260,543	339,502	600,045	44,730	213,231	240,226	453,457

*Includes semi-chemical pulp.

†Figures for year ended 31 March 1974 not available.

APPENDIX 18

Estimated New Zealand Production of Forest Products in Roundwood Equivalent and Actual Roundwood Removals for the Year Ended 31 March 1973*

(Volume in thousands cubic metres)

Category	Indigenous Wood	Exotic Wood	Total
(1)	(2)	(3)	(4)
Logs for export	8.5	2,036.0	2,044.5
Chips for export	31.1	274.7	305.8
Sawn timber	761.7	3,301.7	4,063.4
Pulp and pulp products	51.0	2,299.3	2,350.3
Peelers, veneer, and plywood	28.3	65.1	93.4
Smallwood and miscellaneous	8.5	427.6	436.1
Total (roundwood equivalent)	889.1	8,404.4	9,293.5
Less waste used in pulp production—			
Sawmill residues	..	934.5	934.5
Waste paper	..	116.1	116.1
Total roundwood removed—			
1972–73	889.1	7,353.8	8,242.9
1971–72	948.6	7,016.9	7,965.5
1970–71	1,013.7	7,181.2	8,194.9
1969–70	1,033.6	6,781.9	7,815.5

*Figures for year ended 31 March 1974 not availble.

Note—(1) Smallwood and miscellaneous is partly estimated. (2) Firewood is excluded. (3) Waste paper does not include broke or trimmings from producers' own machines.

APPENDIX 19

External Trade of New Zealand in Forest Products

(a) *Imports of Timber*

Calendar Year	Sawn Timber							Total Sawn Timber	Sleepers	Logs and Poles
	Hardwoods			Softwoods						
	Australian	Oak	Other	Douglas Fir	Redwood	Cedar	Other			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					(Volume in cubic metres)					
1967 ..	13,335	28	11,022	8,094	6,947	17,613	3,672	60,711	23	16,112
1968 ..	9,729	226	6,935	4,823	3,752	10,921	2,242	38,628	269	14,583
1969 ..	9,904	170	10,798	4,202	7,131	11,412	1,843	45,460	64	13,224
1970 ..	10,362	241	15,739	6,334	4,283	11,700	772	49,431	5	14,328
1971 ..	10,008	42	10,034	3,672	1,944	7,610	866	34,176	–	12,544
1972 ..	10,646	201	7,059	2,445	4,526	6,256	1,867	33,000	–	12,459
					(Value in $(000))					
1967 ..	725	3	510	300	294	826	213	2,871	..	335
1968 ..	633	17	417	283	221	707	142	2,420	17	366
1969 ..	682	19	721	307	576	949	149	3,403	4	345
1970 ..	737	33	1,251	499	368	1,127	62	4,077	..	674
1971 ..	773	9	826	256	197	630	79	2,770	..	474
1972 ..	757	28	555	208	479	559	166	2,752		432

(b) *Exports of Timber*

Calendar Year	Indigenous			Exotic					Total Sawn Timber	Sleepers	Logs and Poles	Chips
	Beech	Other	Total	Radiata Pine		Douglas Fir	Other	Total				
				Sawn	Cases							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						(Volume in cubic metres)						b.d.u.*
1967	160	1,034	1,194	76,068	5,036	10,376	757	92,237	93,431	..	795,872	
1968	797	8,887	9,684	150,174	6,874	47,650	465	205,163	214,847	..	1,440,815	
1969	1,055	8,887	9,942	175,564	5,718	58,727	1,295	241,304	251,246	33	1,671,597	
1970	4,328	9,134	13,462	181,287	4,767	60,655	6,680	253,389	266,851	..	1,820,600	69,848
1971	2,473	5,873	8,346	216,683	2,872	63,283	12,764	295,602	303,948	16	1,821,194	85,466
1972	2,348	4,300	6,648	150,764	2,917	67,437	12,414	233,531	240,180	..	1,855,826	89,441
						(Value in $(000))						
1967	4	63	67	1,982	223	343	24	2,572	2,639	..	7,120	
1968	50	548	598	4,130	490	2,147	13	6,780	7,378	..	16,507	
1969	67	520	587	5,283	139	2,797	80	8,299	8,886	2	22,550	
1970	229	761	990	6,218	250	2,920	320	9,708	10,698	..	24,830	1,793
1971	135	547	682	7,896	194	3,066	494	11,650	12,332	7	28,548	2,179
1972	121	375	496	5,154	193	3,398	414	9,159	9,655	..	30,642	2,491

Source: Department of Statistics; prepared by the New Zealand Forest Service.

Note—The basis for valuation is: imports, c.d.v.; exports, f.o.b.
*b.d.u. = bone dry unit; 1 b.d.u. = 1,090 kilograms of oven dry wood.

APPENDIX 19—continued

EXTERNAL TRADE OF NEW ZEALAND IN FOREST PRODUCTS—*continued*

(c) *Imports of Pulp and Paper*

Calendar Year	Wood Pulp	Fibreboard	Paper and Paperboard		
			Newsprint	Other Paper and Paperboard	Total
(1)	(2)	(3)	(4)	(5)	(6)
		(Quantity in tonnes)			
1967	21,740	5,110*	788	19,335	20,123
1968	10,411	15,979*	688	24,517	25,205
1969	11,077	3,344*	787	18,756	19,543
1970	18,860	11,055*	494	28,160	28,654
1971	14,627	2,415*	493	19,751	20,244
1972	12,340	6,317*	447	38,678	39,125
		(Value in $(000))			
1967	1,887	4	83	5,988	6,071
1968	987	8	109	7,834	7,943
1969	1,235	1	123	8,987	9,110
1970	3,260	3	80	10,150	10,230
1971	1,142	1	79	9,004	9,083
1972	1,637	10	74	11,320	11,394

(d) *Exports of Pulp and Paper*

Calendar Year	Wood Pulp	Fibreboard	Paper and Paperboard		
			Newsprint	Other Paper and Paperboard	Total
(1)	(2)	(3)	(4)	(5)	(6)
		(Quantity in tonnes)			
1967	73,872	344,856*	109,409	3,865	113,274
1968	94,032	1,097,464*	119,590	17,728	137,318
1969	79,883	1,913,431*	120,339	27,303	147,642
1970	97,579	1,436,467*	118,578	26,450	145,029
1971	100,454	2,109,549*	126,885	18,119	145,004
1972	118,756	2,315,329*	124,410	28,831	153,241
		(Value in $(000)			
1967	5,911	154	12,091	613	12,704
1968	6,864	431	16,093	2,490	19,014
1969	6,746	725	15,769	3,635	19,404
1970	9,127	653	15,276	4,521	19,797
1971	9,765	1,038	16,018	3,697	19,715
1972	11,478	1,158	15,728	5,032	20,760

*In square metres.

Source: Department of Statistics; prepared by the New Zealand Forest Service.

NOTE—(1) "Other Paper and Paperboard" excludes manufactures of paper and paperboard; values of "Other Paper and Paperboard" include minor items for which no quantities are given.
(2) Basis for valuation: imports, c.d.v.; exports, f.o.b.

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